SHARP

SERVICE MANUAL

S27M275KB6025

MICROWAVE DRAWER MODELS

KB-6024MS/MK/MW

KB-6024MS pictured

KB-6025MS/MK/MW

KB-6025MS pictured

In the interest of user-safety the unit should be restored to its original condition and only parts identical to those specified should be used.

WARNING TO SERVICE PERSONNEL:
This service manual is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. Sharp Electronics Corporation cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this manual.

Microwave ovens contain circuitry capable of producing very high voltage and current. Contact with the following parts may result in a severe, possibly fatal, electrical shock. (High Voltage Capacitor, High Voltage Power Transformer, High Voltage Rectifier and Heat sink etc., and Magnetron, High Voltage Harness etc..)

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SHARP ELECTRONICS CORPORATION

This document has been published to be used for after sales service only. The contents are subject to change without notice.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.
(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(e) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

BEFORE SERVICING

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.
If microwave emissions level is in excess of the specified limit, contact SHARP ELECTRONICS CORPORATION immediately @1-800-237-4277.

If the unit operates with the door open, service person should 1) tell the user not to operate the oven and 2) contact SHARP ELECTRONICS CORPORATION and Food and Drug Administration's Center for Devices and Radiological Health immediately.

Service personnel should inform SHARP ELECTRONICS CORPORATION of any certified unit found with emissions in excess of 4mW/cm^2. The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

WARNING TO SERVICE PERSONNEL

Microwave Oven units contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock.

(Example)

High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness, Heating Elements, etc..

Read the Service Manual carefully and follow all instructions.

Before Servicing

1. Disconnect the power supply cord , and then remove cabinet.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.

WARNING: RISK OF ELECTRIC SHOCK. DISCHARGE THE HIGH-VOLTAGE CAPACITOR BEFORE SERVICING.

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Whenever troubleshooting is performed the power supply must be disconnected. It may, in some cases, be necessary to connect the power supply after the outer case has been removed, in this event:

1. Disconnect the power supply cord, and then remove neccessary covers.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When the testing is completed,

1. Disconnect the power supply cord, and then remove covers.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the covers.
6. Reconnect the power supply cord.
7. Run the unit and check all functions.

After repairing

1. Reconnect all leads removed from components during testing.
2. Reinstall the covers.
3. Reconnect the power supply cord.
4. Run the oven and check all functions.

Microwave ovens should not be operated empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven tray, close the drawer and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out **Before Servicing** procedure and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.

MICROWAVE MEASUREMENT PROCEDURE

A. Requirements:

1) Microwave leakage limit (Power density limit): The power density of microwave radiation emitted by a microwave oven should not exceed 1mW/cm^2 at any point 5cm or more from the external surface of the oven, measured prior to acquisition by a purchaser, and thereafter (through the useful life of the oven), 5 mW/cm^2 at any point 5cm or more from the external surface of the oven.
2) Safety interlock switches:
   Primary interlock relay switch shall prevent microwave radiation emission in excess of the requirement as above mentioned. Secondary interlock relay and door sensing switch shall prevent microwave radiation emission in excess of 5 mW/cm2 at any point 5cm or more from the external surface of the oven.

B. Preparation for testing:
Before beginning the actual measurement of leakage, proceed as follows:
1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.

Important:
Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030.10(c)(3)(i), must be used for testing.

2) Place the load of 275±15 ml (9.8 oz) of tap water initially at 20±5^{O}C (68^{O}F) in the center of the oven cavity.
   The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic.
   The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
3) Set the cooking control on Full Power Cooking Mode.
4) Close the drawer and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage test:

Closed-drawer leakage test (microwave measurement):
1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the drawer and the body of the oven.
2) Move the probe slowly, not faster than 1 in./sec. (2.5 cm/sec.) along the gap, watching for the maximum indication on the meter.
3) Check for leakage at the drawer screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg., around the switches, indicator, and vents).
   While testing for leakage around the drawer, pull the drawer away from the front of the oven as far as is permitted by the closed latch assembly.
4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than 4mW/cm^2, and that the primary interlock switch/secondary interlock relay does turn the oven OFF before any door movement.

NOTE: After servicing, record data on service invoice and microwave leakage report.

SERVICE MANUAL

SHARP

MICROWAVE DRAWERS

KB-6024MS / KB-6024MK / KB-6024MW
KB-6025MS / KB-6025MK / KB-6025MW

FOREWORD

This Manual has been prepared to provide Sharp Electronics Corp. Service Personnel and Service Information for the MICROWAVE DRAWERS, KB-6024MS, KB-6024MK, KB-6024MW and KB-6025MS, KB-6025MK, KB-6025MW.

It is recommended that service personnel carefully study the entire text of this manual so that they will be qualified to render satisfactory customer service.

Check the interlock switches and the door seal carefully. Special attention should be given to avoid electrical shock and microwave radiation hazard.

WARNING

Never operate the oven until the following points are ensured.
(A) The door is tightly closed.
(B) The door brackets and hinges are not defective.
(C) The door packing is not damaged.
(D) The door is not deformed or warped.
(E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service personnel.

DANGER

Certain initial parts are intentionally not grounded and present a risk of electrical shock only during servicing. Service personnel - Do not contact the following parts while the appliance is energized;
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness;
If provided, Vent Hood, Fan assembly, Cooling Fan Motor.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to voltage above 250V.

All the parts marked "Δ" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

SHARP ELECTRONICS CORPORATION

SHARP PLAZA, MAHWAH,
NEW JERSEY 07430-2135

PRODUCT DESCRIPTION
SCHEMATICS
TEST PROCEDURE
TOUCH CONTROL PANEL
MICROWAVE DRAWER DISSASSEMBLY AND ADJUSTMENT PROCEDURE
WIRING DIAGRAM
PARTS LIST

MICROWAVE DRAWER SPECIFICATION

ITEM	DESCRIPTION
Power Requirements	120 Volts 14.5 Amperes, 1000 watts 60 Hz Single phase, 3 wire grounded
Power Output	1000 watts (IEC TEST PROCEDURE) Operating frequency of 2450MHz
Cooking Cavity Dimensions 1.0 Cubic Feet	KB6024 Width 17-11/32 KB6025 Width 17-11/32 Height 5-7/8" Height 5-7/8" Depth 17-1/8" Depth 17-1/8"
Outside Dimensions (Including drawer handle)	KB6024 Width 23-7/8" KB6025 Width 30" Height 15-9/32" Height 15-9/32" Depth 26-1/16" Depth 26-1/16"
Control Complement	Touch Control System Clock (1:00 - 12:59) Timer (0 - 99 min. 99 seconds) Microwave Power for Variable Cooking Repetition Rate; P-HI ..... Full power throughout the cooking time P-90..... approx. 90% of Full Power P-80..... approx. 80% of Full Power P-70..... approx. 70% of Full Power P-60..... approx. 60% of Full Power P-50..... approx. 50% of Full Power P-40..... approx. 40% of Full Power P-30 ..... approx. 30% of Full Power P-20..... approx. 20% of Full Power P-10..... approx. 10% of Full Power P-0..... No power throughout the cooking time START/MINUTE PLUS pad, Defrost pad, Number selection pad, Keep-warm pad, Power Level pad, Timer/Clock pad, Stop/Clear pad, Sensor Reheat, Sensor Popcorn, Sensor Cook, Open pad, Close pad, Setup/Custom Help, On/Off, Control Lock, Reheat, Soften and Melt.
Oven Cavity Light	Yes
Safety Standard	UL Listed FCC Authorized DHHS Rules, CFR, Title 21, Chapter 1, Subchapter J

GENERAL INFORMATION

GROUNDING INSTRUCTIONS

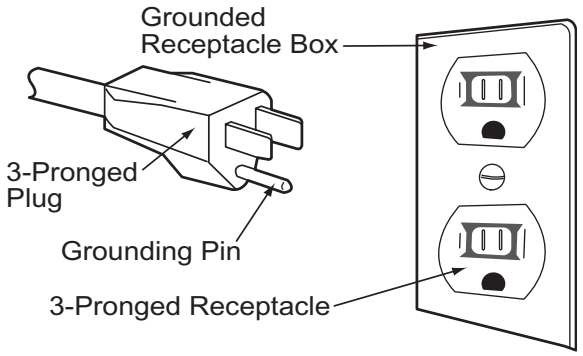
This oven is equipped with a three prong grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded in accordance with the National Electrical Code and local codes and ordinances.
In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current.

WARNING: Improper use of the grounding plug can result in a risk of electric shock.

Electrical Requirements
The electrical requirements are a 120 volt 60 Hz, AC only, 15 or 20 amp. fused electrical supply. It is recommended that a separate circuit serving only this appliance be provided. When installing this appliance, observe all applicable codes and ordinances.

Where a two-pronged wall-receptacle is encountered, it is the personal responsibility and obligation of the customer to contact a qualified electrician and have it replaced with a properly grounded three-pronged wall receptacle or have a grounding adapter properly grounded and polarized. If an extension cord must be used, it should be a 3-wire, 15 amp. or higher rated cord. Do not drape over a counter top or table where it can be pulled on by children or tripped over accidentally.

CAUTION: DO NOT UNDER ANY CIRCUMSTANCES CUT OR REMOVE THE ROUND GROUNDING PRONG FROM THIS PLUG.



KB-6024/6025M
(Colors may vary)

NOTE:
The directed features are disabled after one minute when the oven is not in use. These features are automatically enabled when the door is opened and closed or the STOP/ CLEAR pad is pressed.

OPERATION

DESCRIPTION OF OPERATING SEQUENCE

The following is a description of component functions during oven operation.

OFF CONDITION

Closing the drawer activates the door sensing switch and secondary interlock switch. (In this condition, the monitor switch contacts are opened.)
When oven is plugged in, 120 volts A.C. is supplied to the control unit. (Page 10).

1. The display will show flashing "Enjoy Your Drawer Touch Clear and Touch Clock".
   To set any program or set the clock, you must first touch the STOP/CLEAR pad. The display will clear, and " : " will appear.

COOKING CONDITION

Program desired cooking time by touching the NUMBER pads. Program the power level by touching the POWER LEVEL pad and then a Number pad.
When the START pad is touched, the following operations occur:

1. The contacts of relays are closed and components connected to the relays are turned on as follows.
   (For details, refer to Page 10)

RELAY	CONNECTED COMPONENTS
RY-1	oven lamp/stir fan motor/fan motor
RY-2	power transformer

2. 120 volts A.C. is supplied to the primary winding of the power transformer and is converted to about 3.3 volts A.C. output on the filament winding, and approximately 2370 volts A.C. on the high voltage winding.
3. The filament winding voltage heats the magnetron filament and the H.V. winding voltage is sent to a voltage doubler circuit.
4. The microwave energy produced by the magnetron is channelled through the waveguide into the cavity feedbox, and then into the cavity where the food is placed to be cooked.
5. Upon completion of the cooking time, the power transformer, oven lamp, etc. are turned off, and the generation of microwave energy is stopped. The oven will revert to the OFF condition.
6. When the drawer is opened during a cook cycle, the monitor switch, door sensing switch, secondary interlock switch, relay (RY1) and primary interlock relay are activated with the following results. The circuits to the stir fan motor, the cooling fan motor, and the high voltage components are de-energized, the oven lamp remains on, and the digital read-out displays the time still remaining in the cook cycle when the door was opened.
7. The monitor switch electrically monitors the operation of the secondary interlock switch and secondary interlock relay and is mechanically associated with the drawer so that it will function in the following sequence.
8. When the drawer opens from the closed position, the primary interlock relay (RY2) and secondary interlock switch open their contacts. And contacts of the relay (RY1) remains closed. Then the monitor switch contacts close.
9. When the drawer is closed from the open position, the monitor switch contacts open first. Then the contacts of the secondary interlock switch and door sensing switch close. And contacts of the relay (RY1) open.

If the secondary interlock switch and primary interlock relay (RY2) fail with the contacts closed when the drawer is opened, the closing of the monitor switch contacts will form a short circuit through the fuse, secondary interlock switch, relay (RY1) and secondary interlock relay (RY2), causing the fuse to blow.

POWER LEVEL P-0 TO P-90 COOKING

When Variable Cooking Power is programmed, the 120 volts A.C. is supplied to the power transformer intermittently through the contacts of relay (RY-2) which is operated by the control unit within a 32 second time base. Microwave power operation is as follows:

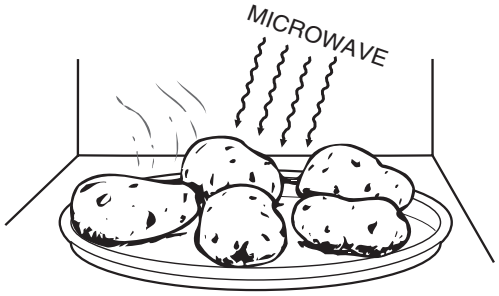
VARI-MODE	ON TIME	OFF TIME
Power 10(P-HI) (100% power)	32 sec.	0 sec.
Power 9(P-90) (approx. 90% power)	30 sec.	2 sec.
Power 8(P-80) (approx. 80% power)	26 sec.	6 sec.
Power 7(P-70) (approx. 70% power)	24 sec.	8 sec.
Power 6(P-60) (approx. 60% power)	22 sec.	10 sec.
Power 5(P-50) (approx. 50% power)	18 sec.	14 sec.
Power 4(P-40) (approx. 40% power)	16 sec.	16 sec.
Power 3(P-30) (approx. 30% power)	12 sec.	20 sec.
Power 2(P-20) (approx. 20% power)	8 sec.	24 sec.
Power 1(P-10) (approx. 10% power)	6 sec.	26 sec.
Power 0(P-0) (0% power)	0 sec.	32 sec.

Note: The ON/OFF time ratio does not correspond with the percentage of microwave power, because approx. 2 seconds are needed for heating of the magnetron filament.

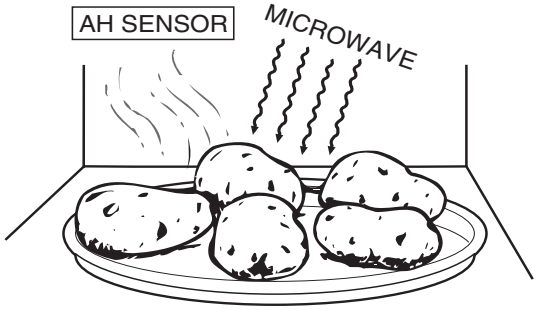
SENSOR COOKING CONDITION

Using the SENSOR function, food is cooked without figuring time, power level or quantity. When the oven senses enough steam from the food, it relays the information to its microprocessor which will calculate the remaining cooking time and power level needed for best results. When the food is cooked, water vapor is developed. the sensor "senses" the vapor and its resistance increase gradually. When the resistance reaches the value set according to the menu, supplementary cooking is started.
The time of supplementary cooking is determined by experiment with each food category and inputted into the LSI. An example of how sensor works: (Potatoes)

1. Potatoes at room temperature. Vapor is emitted very slowly.



2.Heat Potatoes. Moisture and humidity is emitted very rapidly. You can smell the aroma as it cooks.



3.Sensor detects moisture and humidity and calculates cooking time and variable power.

Cooking Sequence.

1. Touch one of the SENSOR pads.

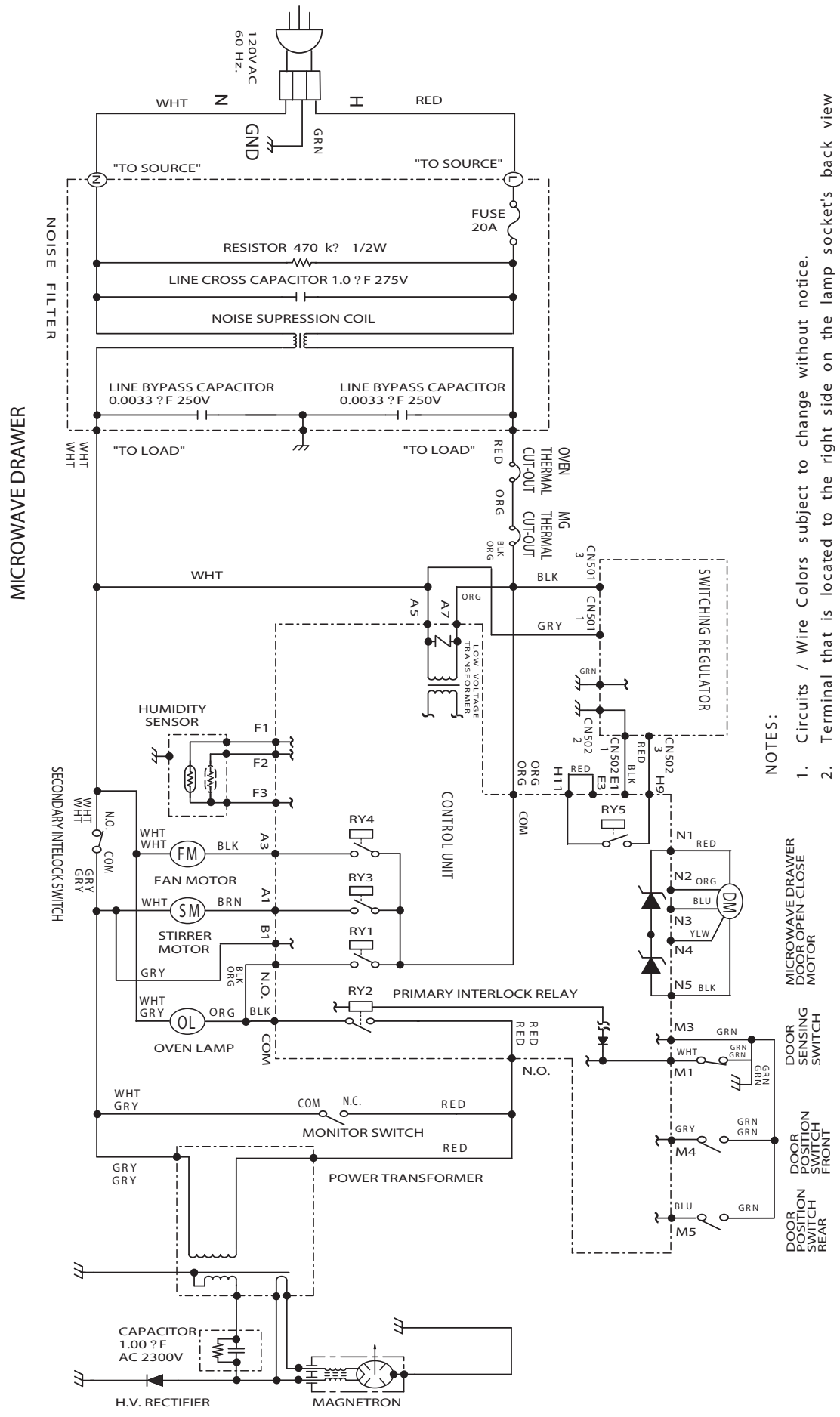
NOTE: The oven should not be operated on sensor immediately after plugging in the unit. Wait two minutes before cooking on SENSOR.

2. The coil of shut-off relay (RY-1) is energized, but the power transformer is not turned on.
3. After about 16 seconds, the cook relay (RY-2) is energized. The power transformer is turned on, microwave energy is produced and first stage is started. The 16 seconds is the cooling time required to remove any vapor from the oven cavity and sensor.

NOTE: During this first stage, do not open the drawer or touch STOP/CLEAR pad.

4. When the sensor detects the vapor emitted from the food, the display switches over to the remaining cooking time and the timer counts down to zero.
   At this time, the drawer may be opened to stir, turn or season food.
5. When the timer reaches zero, an audible signal sounds. The shut-off relay and cook relay are de-energized and the power transformer, oven lamp, etc. are turned off.
6. Opening the drawer or touching the STOP/CLEAR pad, the time of the day will reappear on the display and the oven will revert to an OFF condition. When the timer reaches zero, an audible signal sounds.

SCHEMATIC (OFF CONDITION)



NOTES:

1. Circuits / Wire Colors subject to change without notice.
2. Terminal that is located to the right side on the lamp socket's back view must be connected to neutral wire.
3. Only certain models use the absolute humidity sensor
4. Power Transformer (Finish Lead) terminal must be connected to HOT wire (RED)

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

A **TOUCH CONTROL PANEL ASSEMBLY TEST**

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance cannot be performed with only a voltmeter and ohmmeter.

In this service manual, the touch control panel assembly is divided into three units, Control Unit, Keyboard Unit and Power Unit, and troubleshooting by unit replacement is described according to the symptoms indicated.

Before testing,

1) Disconnect the power supply cord, and then disassemble as per "MICROWAVE DRAWER DISASSEMBLY" page 27.
2) Open the drawer and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.

1. Keyboard Unit.

NOTE ;

1) Check Keyboard unit connection before replacement.
2) Reconnect all leads removed from components during testing.
3) Re-install the covers.
4) Reconnect the power supply cord after the covers are installed.
5) Run the oven and check all functions.

The following symptoms indicate a defective keyboard unit.

a) When touching the pads, a certain pad produces no signal at all.
b) When touching a number pad, two figures or more are displayed.
c) When touching the pads, sometimes a pad produces no signal.

If the Keyboard unit is defective.

1) Disconnect the power supply cord, and then remove covers.
2) Open the drawer and block it open.
3) Discharge high voltage capacitor.
4) Replace the Keyboard unit.
5) Reconnect all leads removed from components during testing.
6) Re-install the covers.
7) Reconnect the power supply cord after the covers are installed.
8) Run the oven and check all functions.

2. Control Unit

The following symptoms indicate a defective control unit. Before replacing the control unit, perform the Keyboard unit test (Procedure B) to determine if control unit is faulty.

2-1 In connection with indicators

a) At a certain digit, all or some segments do not light up.
b) At a certain digit, brightness is low.
c) Only one indicator does not light.
d) The corresponding segments of all digits do not light up; or they continue to light up.
e) Wrong figure appears.
f) A certain group of indicators do not light up.
g) The figure of all digits flicker.

2-2 Other possible problems caused by defective control unit.

a) Buzzer does not sound or continues to sound.
b) Clock does not operate properly.
c) Cooking is not possible.

3. Power Unit or Touch Control Transformer

a) Fan motor, stirrer motor, oven lamp or electrical parts do not turn on or do not turn off.
b) Digital display on the control unit does not show anything.

When testing is completed,

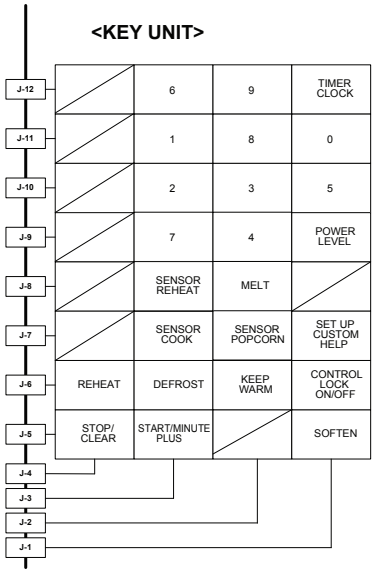
1) Disconnect the power supply cord, and then disassemble as per "MICROWAVE DRAWER DISASSEMBLY" page 27.
2) Open the drawer and block it open.
3) Discharge high voltage capacitor.

4) Reconnect all leads removed from components during testing.
5) Re-install the covers.
6) Reconnect the power supply cord after the covers are installed.
7) Run the oven and check all functions.

B **KEY UNIT TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the drawer and block it open.
3. Discharge high voltage capacitor.
4. If the display fails to clear when the STOP/CLEAR pad is depressed, first verify the flat ribbon cable is making good contact, verify that the door sensing switch (stop switch) operates properly; that is the contacts are closed when the drawer is closed and open when the drawer is open. If the door sensing switch (stop switch) is good, disconnect the flat ribbon cable that connects the key unit to the control unit and make sure the drawer sensing switch is closed (either close the drawer or short the door sensing switch connecter). Use the Key unit matrix indicated on the control panel schematic and place a jumper wire between the pins that correspond to the STOP/CLEAR pad making momentary contact. If the control unit responds by clearing with a beep the key unit is faulty and must be replaced. If the control unit does not respond, it is faulty and must be replaced. If a specific pad does not respond, the above method may be used (after clearing the control unit) to determine if the control unit or key pad is at fault.
5. Reconnect all leads removed from components during testing.
6. Re-install the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

<KEY UNIT>



C **RELAY TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, re-connect the power supply cord.
7. Remove the outer case and check voltage between Pin Nos. 5 and 7 of the 4 pin connector (CN-A) on the power unit with an A.C. voltmeter.
   The meter should indicate 120 volts, if not check oven circuit.
   RY1, RY2, RY3 and RY4 Relay Test
   These relays are operated by D.C. voltage
   Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.
   DC. voltage indicated — Defective relay.
   DC. voltage not indicated — Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 26V D.C.	Oven lamp / Common
RY2	Approx. 25V D.C.	Power transformer
RY3	Approx. 26V D.C.	Stirrer motor
RY4	Approx. 26V D.C.	Fan motor
RY5	Approx. 26V D.C.	Switching regurator for drawer motor

8. Disconnect the power supply cord, and then remove outer case.
9. Open the door and block it open.
10. Discharge high voltage capacitor.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

12.Re-install the outer case (cabinet).
13.Reconnect the power supply cord after the outer case is installed.
14.Run the oven and check all function.

D DEFROST TEST

WARNING : The oven should be fully assembled before following procedure.
(1) Place one cup of water in the center of the tray in the oven cavity.
(2) Close the drawer, touch the Defrost pad. Then select Steaks/Chops by touching the number pad 2. And touch the number pad 5. (Now, weight 0.5lb is set.) And then touch the start pad.
(3) The oven is in Defrost cooking condition.
(4) The oven will operate as follows

WEIGHT	1ST STAGE		2ND STAGE		3RD. STAGE	
	LEVEL	TIME	LEVEL	TIME	LEVEL	TIME
0.5lb	60%	20sec.	40%	20sec.	30%	45sec.

(5) If improper operation is indicated, the control unit is probably defective and should be checked.

E PROCEDURES TO BE TAKEN WHEN THE FUSE ON THE PRINTED WIRING BOARD (PWB) IS OPEN.

To protect the electronic circuits, this model is provided with a fuse added to the primary on the PWB.

1. Fuse check and repairs.
   1) Disconnect the power supply cord.
   2) Remove the outer case cabinet.
   3) Open the door and block it open.
   4) Discharge high voltage capacitor.
   5) If the Fuse is blown, replace power unit.
   6) Make a visual inspection of the varistor. Check for burned damage. If the varistor has been burned, replace the power unit.
   7) Examine the touch control transformer with a tester for the presence of layer short-circuit (check the primary coil resistance which is approximately 151.6Ω ± 10%). If any abnormal condition is detected, replace the touch control transformer.
   8) Reconnect all leads removed from components during testing.
   9) Re-install the outer case (cabinet).
   10) Reconnect the power supply cord after the outer case is installed.
   11) Run the oven and check all functions.

2. Follow the troubleshooting guide given below, if indicator does not light up after above check and repairs are finished.
   1) Disconnect the power supply cord.
   2) Remove the outer case cabinet.
   3) Open the door and block it open.
   4) Discharge high voltage capacitor.
   5) Disconnect the leads to the primary of the power transformer.
   6) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
   7) After that procedure, re-connect the power supply cord.
   8) Follow the troubleshooting guide given below for repair.

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	The rated AC voltage is not present between Pin Nos. 5 and 7 of the 4-pin connecter (CN-A).	Check supply voltage and oven power cord.
2	The rated AC voltage is present at primary side of touch control transformer.	Touch control transformer or secondary circuit defective. Check and replace touch control transformer or power unit

.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

11) Discharge high voltage capacitor.
12) Reconnect all leads removed from components during testing.
13) Re-install the outer case (cabinet).
14) Reconnect the power supply cord after the outer case is installed.
15) Run the oven and check all functions.

F **AH SENSOR TEST**

Checking the initial sensor cooking condition

WARNING : The oven should be fully assembled before following procedure.

(1) The oven should be plugged in at least two minutes before sensor cooking.
(2) Room temperature should not exceed 95°F (35°C).
(3) The unit should not be installed in any area where heat and steam are generated. The unit should not be installed, for example, next to a conventional surface unit. Refer to the "INSTALLATION INSTRUCTIONS" of the operation manual.
(4) Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation.
(5) Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.
(6) The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.
(7) Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapor given of by the spray and turn off before food is properly cooked.
(8) If the sensor has not detected the vapor of the food, ERROR will appear and the oven will shut off.

Water load cooking test

WARNING : The oven should be fully assembled before following procedure.

Make sure the oven has been plugged in at least two minutes before checking sensor cook operation. The cabinet should be installed and screws tightened.

(1) Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
(2) Place the container on the center of tray in the oven cavity.
(3) Close the drawer.
(4) Touch the TIMER/CLOCK pad once, the POWER LEVEL pad twice and the START pad once. And touch the number pads 1 once and the number pad 4 once. Now, the oven is in the sensor cooking condition, and "AH20" and "ON" will appear in the display.
(5) The oven will operate for the first 16 seconds, without generating microwave energy.

NOTE: ERROR will appear if the door is opened or STOP/CLEAR pad is touched during first stage of sensor cooking.

(6) After approximately 16 seconds, microwave energy is produced.

If ERROR is displayed or the oven does not turn off, replace the AH sensor or check the control unit, refer to explanation below. If the oven stops after 5 minutes and no ERROR code is displayed, then the AH sensor is normal. Check other parts except the AH sensor.

TESTING METHOD FOR AH SENSOR AND/OR CONTROL UNIT

To determine if the sensor is defective, the simplest method is to replace it with a new replacement sensor.

(1) Disconnect the power supply cord, and then disassemble as per "MICROWAVE DRAWER DISASSEMBLY" page 25.
(2) Open the drawer and block it open.
(3) Discharge high voltage capacitor.
(4) Remove the AH sensor.
(5) Install the new AH sensor.
(6) Reconnect all leads removed from components during testing.
(7) Re-install the covers.
(8) Reconnect the power supply cord after the covers are installed.
(9) Reconnect the oven to the power supply and check the sensor cook operation as follows:
9-1. Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

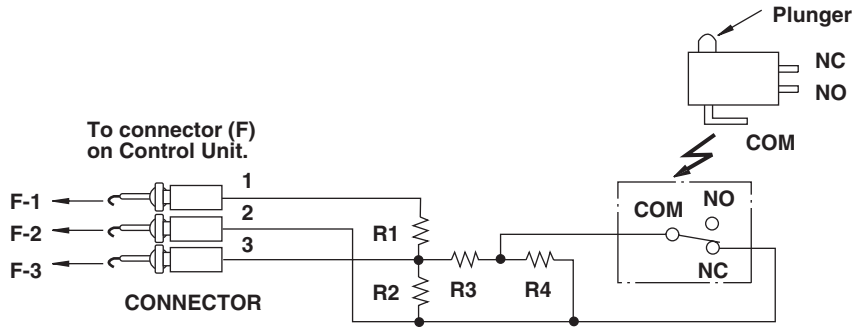
9-2. Place the container on the center of tray in the oven cavity.
9-3. Close the drawer.
9-4. Touch the TIMER/CLOCK pad once, the POWER LEVEL pad twice and the START pad once. And touch the number pads 1 once and the number pad 4 once.
9-5. The control panel is in automatic Sensor operation.
9-6. The oven turns off automatically, and the time for detecting moisture will be displayed.

If new sensor does not operate properly, the problem is with the control unit, and refer to explanation below.

CHECKING CONTROL UNIT

(1) Disconnect the power supply cord, and then disassemble as per "MICROWAVE DRAWER DISASSEMBLY" page 25.
(2) Open the drawer and block it open.
(3) Discharge high voltage capacitor.
(4) Disconnect the sensor connector that is mounted to control panel.
(5) Then connect the dummy resistor circuit (see fig.) to the sensor connector of control panel.
(6) Disconnect the leads to the primary of the power transformer.
(7) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
(8) After that procedure, re-connect the power supply cord.
(9) Check the sensor cook operation proceed as follows:
9-1. Close the door. Touch the TIMER/CLOCK pad once, the POWER LEVEL pad twice and the START pad once. And touch the number pads 1 once and the number pad 4 once.
9-2. The control panel is in the sensor cooking operation.
9-3. After approximately 25 seconds, push plunger of select switch for more than 3 seconds. This condition is same as judgement by AH sensor.
9-4. After approximately 3 seconds, the display shows " X X . X X " which is the time for detecting moisture.
If the above is not the case, the control unit is probably defective.
If the above is proper, the AH sensor is probably defective.
(10) Disconnect the power supply cord, and then remove covers.
(11) Open the drawer and block it open.
(12) Discharge high voltage capacitor.
(13) Disconnect the dummy resistor circuit from the sensor connector of control panel.
(14) Carry out necessary repair.
(15) Reconnect all leads removed from components during testing and repairing.
(16) Re-install the covers.
(17) Reconnect the power supply cord after the outer case is installed. Run the oven and check all functions.
(18) Carry out "Water load cooking test" again and ensure that the oven works properly.

R1, R2 : 22Ω ± 1% 1/2W
R3 : 4.3kΩ ± 5% 1/4W
R4 : 1MΩ ± 5% 1/4W



Refer to the disassembly instructions found on Page 16.

G **MAGNETRON ASSEMBLY TEST**

1. Disconnect the power supply cord.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. To test for an open filament, isolate the magnetron from the high voltage circuit. A continuity check across the magnetron filament leads should indicate less than 1 ohm.
5. To test for a shorted magnetron, connect the ohmmeter leads between the magnetron filament leads and chassis ground. This test should indicate an infinite resistance. If there is little or no resistance the magnetron is grounded and must be replaced.
6. Reconnect all leads removed from components during testing.
7. Reassemble the unit.
8. Reconnect the power supply cord.
9. Run the oven and check all functions.

MICROWAVE OUTPUT POWER

The following test procedure should be carried out with the microwave oven in a fully assembled condition.

HIGH VOLTAGES ARE PRESENT DURING THE COOK CYCLE, SO EXTREME CAUTION SHOULD BE OBSERVED.

Power output of the magnetron can be measured by performing a water temperature rise test. This test should only be used if above tests do not indicate a faulty magnetron and there is no defect in the following components or wiring: This test will require a 16 ounce (453cc) measuring cup and an accurate mercury thermometer or thermocouple type temperature tester. For accurate results, the following procedure must be followed carefully:

1. Fill the measuring cup with 16 oz. (453cc) of tap water and measure the temperature of the water with a thermometer or thermocouple temperature tester. Stir the thermometer or thermocouple through the water until the temperature stabilizes. Record the temperature of the water.
2. Place the cup of water in the oven. Operate oven at POWER 10(HIGH) selecting more than 60 seconds cook time. Allow the water to heat for 60 seconds, measuring with a stop watch, second hand of a watch or the digital read-out countdown.
3. Remove the cup from the oven and again measure the temperature, making sure to stir the thermometer or thermocouple through the water until the maximum temperature is recorded.
4. Subtract the cold water temperature from the hot water temperature. The normal result should be 28° to 54°F (16° to 30°C) rise in temperature. If the water temperatures are accurately measured and tested for the required time period the test results will indicate if the magnetron tube has low power output (low rise in water temperature) which would extend cooking time or high power output (high rise in water temperature) which would reduce cooking time. Because cooking time can be adjusted to compensate for power output, the magnetron tube assembly should be replaced only if the water temperature rise test indicates a power output well beyond the normal limits. The test is only accurate if the power supply line voltage is 120 volts and the oven cavity is clean.

H **THERMAL CUT-OUT TEST**

1. Disconnect the power supply cord.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. A continuity check across the thermal cut-out terminals should indicate a closed circuit unless the temperature of the thermal cut-out reaches approximately 293°F(145°C).
   An open thermal cut-out indicates overheating of the oven, exchange the oven thermal cut-out and check inside of oven cavity and for improper setting of cooking time or operation of control unit. Check for restricted air flow through the vent holes of the oven cavity, especially the cooling fan and air guide.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power supply cord.
8. Run the unit and check all functions.

CAUTION: IF THE THERMAL CUT-OUT INDICATES AN OPEN CIRCUIT AT ROOM TEMPERATURE, REPLACE THERMAL CUT-OUT.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

I **SECONDARY INTERLOCK SWITCH TEST**

1. Disconnect the power supply cord.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the drawer open and a closed circuit with the drawer closed. If improper operation is indicated, replace the secondary interlock switch.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power supply cord.
8. Run the oven and check all functions.

J **STOP SWITCH TEST**

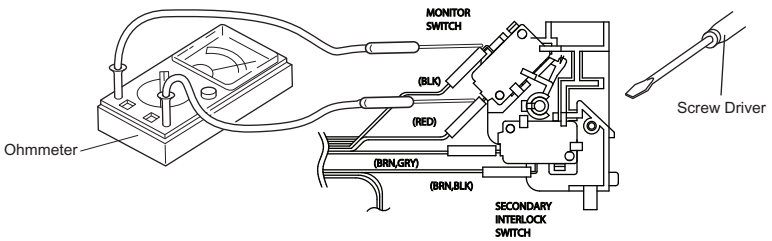
STOP SWITCH

1. Disconnect the power supply cord.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the drawer open and a closed circuit with the drawer closed. If improper operation is indicated, replace the stop switch.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power supply cord.
8. Run the oven and check all functions.

NOTE: If the stop switch contacts fail in the open position and the door is closed, the cooling fan motor, stirrer motor and oven light will be activated by RY1.

K **MONITOR SWITCH TEST**

1. Disconnect the power supply cord.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. Before performing this test, make sure that the secondary interlock switch, according to the above Switch Test Procedure. Disconnect the wire lead from the monitor switch (COM) terminal. Check the monitor switch operation by using the ohmmeter as follows. When the drawer is open, the meter should indicate a closed circuit. When the monitor switch actuator is pushed by a screw driver through the lower latch hole on the front plate of the oven cavity with the drawer opened (in this condition the plunger of the monitor switch is pushed in), the meter should indicate an open circuit. If improper operation is indicated, the switch may be defective and both the monitor switch, plus fuse will need to be replaced. After testing the monitor switch, reconnect the wire lead to the monitor switch (COM) terminal and check the continuity of the monitor circuit.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power supply cord.
8. Run the oven and check all functions.



TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
L	**BLOWN MONITOR FUSE TEST** 1. Disconnect the power supply cord. 2. Open the drawer and block it open. 3. To discharge high voltage capacitor, wait for 60 seconds. 4. If the monitor fuse is blown when the drawer is opened, check the primary interlock switch, secondary interlock switch and monitor switch according to the "TEST PROCEDURE" for those switches before replacing the blown monitor fuse. CAUTION: BEFORE REPLACING A BLOWN MONITOR FUSE, TEST THE SECONDARY INTERLOCK SWITCH, STOP SWITCH AND MONITOR SWITCH FOR PROPER OPERATION. If the monitor fuse is blown by improper switch operation, the monitor fuse and monitor switch must be replaced with "monitor fuse and monitor switch assembly" part number FFS-BA018/KIT, even if the monitor switch operates normally. The monitor fuse and monitor switch assembly is comprised of a 20 ampere fuse and switch. 5. Reconnect all leads removed from components during testing. 6. Reassemble the unit. 7. Reconnect the power supply cord. 8. Run the oven and check all functions.
M	**POWER TRANSFORMER TEST** 1. Disconnect the power supply cord. 2. Open the drawer and block it open. 3. Discharge high voltage capacitor. 4. Disconnect the primary input terminals and measure the resistance of the transformer with an ohmmeter. Check for continuity of the coils with an ohmmeter. On the R x 1 scale, the resistance of the primary coil should be less than 1 ohm and the resistance of the high voltage coil should be approximately 90 ohms; the resistance of the filament coil should be less than 1 ohm. 5. Reconnect all leads removed from components during testing. 6. Reassemble the unit. 7. Reconnect the power supply cord. 8. Run the oven and check all functions. (HIGH VOLTAGES ARE PRESENT AT THE HIGH VOLTAGE TERMINAL, SO DO NOT ATTEMPT TO MEASURE THE FILAMENT AND HIGH VOLTAGE.)

TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units.

(1) Key unit
(2) Control Unit
(3) Power unit

The principal functions of these units and the signals communicated among them are explained below.

Key unit
The key unit is composed of a matrix, signals generated in the LSI are sent to the key unit from P10 - P17.
When a key pad is touched, a signal is completed through the key unit and passed back to the LSI through P20 - P23 to perform the function that was requested.

Control Unit and Power Unit
Control unit consists of LSI, IC, reset circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit, synchronizing signal circuit, keyboard unit circuit, humidity sensor circuit and back light circuit.

1) IC1 (LSI)
This is a microcomputer, responsible for controlling the entire control unit.

2) IC2
This is the IC to drive the Liquid Crystal Display.

3) IC5
This is the IC to amplify the signal from the humidity sensor.

4) Reset Circuit
This circuit generates a signal which resets the LSI (IC1) to the initial state when power is supplied.

5) Indicator Circuit
A circuit to drive the Liquid Crystal Displays (LCD1).

6) Power Source Circuit
This circuit generates voltages necessary in the control unit from the AC line voltage.
In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VC	+5V	LSI(IC1)

7) Relay Circuit
A circuit to drive the magnetron, fan motor, stirrer motor and light the oven lamp.

8) Buzzer Circuit
The buzzer is responsive to signals from the LSI to emit audible sounds (key touch sound and completion sound).

9) Synchronizing Signal Circuit
The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit.
It accompanies a very small error because it works on commercial frequency.

10) Door Sensing Switch (Microwave drawer)
A switch to “tell” the LSI if the drawer is open or closed.

11) Door Position Switch Front / Rear
The switch to “tell” the position of the Microwave drawer door.

12) Back Light Circuit
A circuit to drive the back light (Light emitting diodes LD1- LD3).

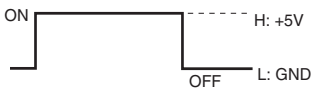
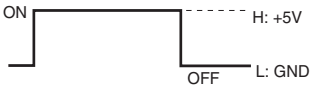
13) Humidity Sensor Circuit
This circuit detects moisture of the cooking food to allow its automatic cooking.

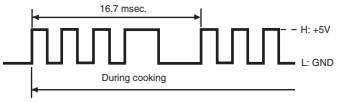
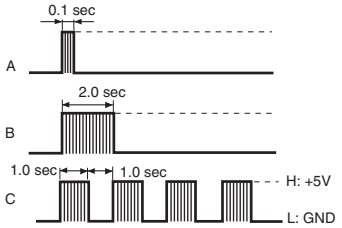
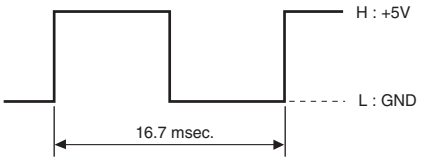
14) Microwave drawer door open-close Circuit
A circuit to drive the microwave drawer door open-close motor.

DESCRIPTION OF LSI (IC-1)

The I/O signal of the LSIis detailed in the following table.

Pin No.	Signal	I/O	Description
1 - 3	AN5- AN3	IN	**Terminal to change cooking input according to the Model.** By using A/D converter contained in the LSI, DC voltage in accordance with the Model in operation is applied to set up its cooking constant.
4	AN2	IN	Input signal which inform the drawer door is in the middle position between the opened position and the closed position, to LSI from the door position switch rear.
5	AN1	IN	Terminal not used.
6	AN0	IN	Terminal not used.
7	CNVSS	IN	**Power source voltage: 0V (GND).** VC voltage of power source circuit input. Connected GND.
8	RESET	IN	**Auto clear terminal.** Signal is input to reset the LSI to the initial state when power is applied. Temporarily set to “L” level the moment power is applied, at this time the LSI is reset. Thereafter set at “H” level.
9	P62	OUT	Terminal not used.
10	P61	IN/OUT	Terminal not used.
11	VSS	IN	**Power source voltage: 0V (GND).** VS voltage of power source circuit input. Connected GND.
12	XIN	IN	**Internal clock oscillation frequency setting input.** The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to Xout terminal.
13	XOUT	OUT	**Internal clock oscillation frequency control output.** Output to control oscillation input of Xin.
14	VCC	IN	**Power source voltage: +5V.** VC voltage of power source circuit input.
15	P60	IN	Plus signal coming from the Microwave drawer door open-close motor is input into P60 as revolution number.
16	P37	IN	**Input signal which communicates the drawer door open information to LSI from the door position switch front.** Door opened; “L” level signal(0V). Door closed; “H” level signal(+5V).
17	P36	OUT	**Signal to change the rotational direction is output to the Microwave drawer door open-close motor.**
18	TXOUT	OUT	Signal to change the rotational speed is output to the Microwave drawer door open-close motor.
19	P34	OUT	Power source to drive the Microwave drawer door open-close motor is output.
20	RXD2	IN	**Input terminal to check the data of display.** Data signal from IC-2 is input to RXD2 to check the flow of the data.
21	TXD2	IN	**Output terminal to send IC-2 the data.** The data of display is output to IC-2.
22	SCLK2	OUT	**Clock timing signal output terminal.** Clock timing signal is sent to IC-2.
23	P30	OUT	**Signal to reset LSI.** Signal is output to reset IC-2.
24 - 25	COM3 - COM2	OUT	Terminal not used.
26	COM1	OUT	**Common data signal.** Connected to LCD signal C5.

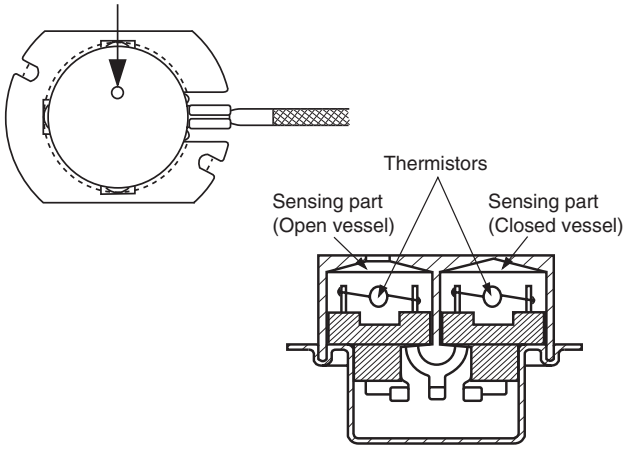
Pin No.	Signal	I/O	Description
27	COM0	OUT	**Common data signal.** Connected to LCD signal C4.
28	VL3	IN	Connected VC (+5V).
29 - 31	P27- P25	OUT	Terminal not used.
32	SEG20	OUT	**Segment data signal.** Connected to LCD segment S24.
33	P23	IN	**Signal coming from touch key.** When any one of J-4 line keys on key matrix is touched, a corresponding signal from P10-P17 will be input into P23. When no key is touched, the signal is held at "L" level.
34	P22	IN	**Signal similar to P23.** When any one of J-3 line keys on key matrix is touched, a corresponding signal will be input into P22.
35	P21	IN	**Signal similar to P23.** When any one of J-2 line keys on key matrix is touched, a corresponding signal will be input into P21.
36	P20	IN	**Signal similar to P23.** When any one of J-1 line keys on key matrix is touched, a corresponding signal will be input into P20.
37	P17	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-12 line key on matrix is touched.
38	P16	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-11 line key on matrix is touched.
39	P15	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-10 line key on matrix is touched.
40	P14	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-9 line key on matrix is touched.
41	P13	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-8 line key on matrix is touched.
42	P12	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-7 line key on matrix is touched.
43	P11	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-6 line key on matrix is touched.
44	P10	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-5 line key on matrix is touched.
45	P07	OUT	**Fan motor (Drawer) driving signal.** To turn on and off relay(RY4). "H" level: During fan motor ON. "L" level: During fan motor OFF. 
46	P06	OUT	**Stirrer motor driving signal.** To turn on and off relay(RY3). "H" level: During fan motor ON. "L" level: During fan motor OFF. 

<table>
<tr><th>Pin No.</th><th>Signal</th><th>I/O</th><th>Description</th></tr>
<tr><td>47</td><td>P05</td><td>OUT</td><td><u>Magnetron high-voltage circuit driving signal.</u>
To turn on and off the cook relay(RY2). In 100% power operation, the signals holds “H” level during microwave cooking and “L” level while not cooking. In other cooking modes (90%, 80%, 70%, 60%, 50%, 40%, 30%, 20%, 10%, 0%) the signal turns to “H” level and “L” level in repetition according to the power level.
<table>
<tr><td></td><td colspan="2">Microwave cooking mode</td><td colspan="2">Other cooking mode</td></tr>
<tr><td>VARI MODE</td><td>ON TIME</td><td>OFF TIME</td><td>ON TIME</td><td>OFF TIME</td></tr>
<tr><td>100% power</td><td>32 sec.</td><td>0 sec.</td><td>60sec.</td><td>0ec.</td></tr>
<tr><td>90% power</td><td>30 sec.</td><td>2 sec.</td><td>54sec.</td><td>6sec.</td></tr>
<tr><td>80% power</td><td>26 sec.</td><td>6 sec.</td><td>48sec.</td><td>12sec.</td></tr>
<tr><td>70% power</td><td>24 sec.</td><td>8 sec.</td><td>42sec.</td><td>18sec.</td></tr>
<tr><td>60% power</td><td>22 sec.</td><td>10 sec.</td><td>36sec.</td><td>24sec.</td></tr>
<tr><td>50% power</td><td>18 sec.</td><td>14 sec.</td><td>30sec.</td><td>30sec.</td></tr>
<tr><td>40% power</td><td>16 sec.</td><td>16 sec.</td><td>24sec.</td><td>36sec.</td></tr>
<tr><td>30% power</td><td>12 sec.</td><td>20 sec.</td><td>18sec.</td><td>42sec.</td></tr>
<tr><td>20% power</td><td>8 sec.</td><td>24 sec.</td><td>12sec.</td><td>48sec.</td></tr>
<tr><td>10% power</td><td>6 sec.</td><td>26 sec.</td><td>4sec.</td><td>56sec.</td></tr>
<tr><td>0% power0 sec.</td><td>32 sec.</td><td>0sec.</td><td>60sec.</td><td></td></tr>
</table></td></tr>
<tr><td>48-52</td><td>P04-P00</td><td>OUT</td><td>Used for initial balancing of the bridge circuit (absolute humidity sensor).</td></tr>
<tr><td>53</td><td>P57</td><td>OUT</td><td><u>Common relay driving signal. (Square Waveform : 60Hz)</u>
To turn on and off the shut-off relays (RY1). The square waveform voltage is delivered to the relay (RY1) driving circuit.
 
</td></tr>
<tr><td>54</td><td>P56</td><td>IN</td><td>Terminal not used.</td></tr>
<tr><td>55</td><td>TXD1</td><td>IN</td><td>Terminal not used.</td></tr>
<tr><td>56</td><td>RXD1</td><td>IN</td><td>Terminal not used.</td></tr>
<tr><td>57</td><td>P53</td><td>IN</td><td>Terminal not used.</td></tr>
<tr><td>58</td><td>P52</td><td>OUT</td><td><u>Signal to sound buzzer.</u>
A: Key touch sound.
B: Completion sound.
C: When the oven stops so that the food can be checked in Automatic cooking mode.
 
</td></tr>
<tr><td>59</td><td>P51</td><td>IN</td><td><u>Input signal which communicates the drawer door close information to LSI.</u>
Door opened; “H” level signal(+5V).
Door closed; “L” level signal(0V).</td></tr>
<tr><td>60</td><td>INT0</td><td>IN</td><td><u>Signal to synchronize LSI with commercial power source frequency.</u>
This is the basic timing for all real time processing of LSI.
 
</td></tr>
<tr><td>61</td><td>AVSS</td><td>IN</td><td><u>A/D converter power source voltage.</u>
The power source voltage to drive the A/D converter in the LSI.</td></tr>
<tr><td>62</td><td>VREF</td><td>IN</td><td><u>Reference voltage input terminal.</u>
A reference voltage applied to the A/D converter in the LSI. Connected to +5V.</td></tr>
<tr><td>63</td><td>AN7</td><td>IN</td><td><u>AH sensor input.</u>
This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.</td></tr>
<tr><td>64</td><td>AN6</td><td>IN</td><td>Used for initial balancing of the bridge circuit (absolute humidity sensor). This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.</td></tr>
</table>

HUMIDITY SENSOR CIRCUIT

(1) Structure of Humidity Sensor

The humidity sensor includes two thermistors as shown in the illustration. One thermistor is housed in the closed vessel filled with dry air while another in the open vessel. Each sensor is provided with the protective cover made of metal mesh to be protected from the external airflow.

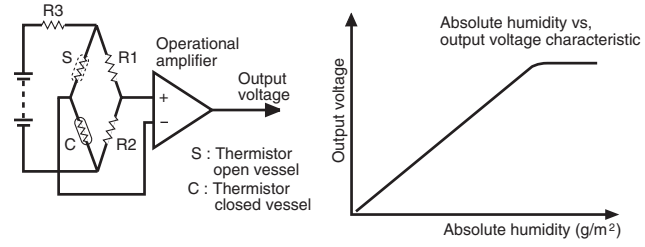


(2) Operational Principle of Humidity Sensor

The figure below shows the basic structure of an absolute humidity sensor. A bridge circuit is formed by two thermistors and two resistors (R1 and R2).

The output of the bridge circuit is to be amplified by the operational amplifier.

Each thermistor is supplied with a current to keep it heated at about 150°C (302°F), the resultant heat is dissipated in the air and if the two thermistors are placed in different humidity conditions they show different degrees of heat conductivity leading to a potential difference between them causing an output voltage from the bridge circuit, the intensity of which is increased as the absolute humidity of the air increases. Since the output is varied every minute, it is amplified by the operational amplifier.



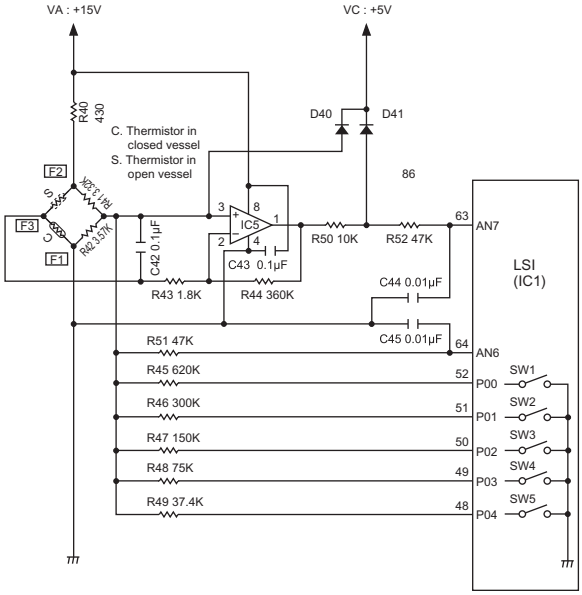
(3) Detector Circuit of Humidity Sensor Circuit

This detector circuit is used to detect the output voltage of the absolute humidity circuit to allow the LSI to control sensor cooking of the unit. When the unit is set in the sensor cooking mode, 16 seconds clearing cycle occurs than the detector circuit starts to function and the LSI observes the initial voltage available at its AN6 terminal.

With this voltage given, the switches SW1 to SW5 in the LSI are turned on in such a way as to change the resistance values in parallel with R45 ~ R49. Changing the resistance values results in that there is the same potential at both F-3 terminal of the absolute humidity sensor and AN6 terminal of the LSI. The voltage of AN7 terminal will indicate about +2.5V. This initial balancing is set up about 16 seconds after the unit is put in the Sensor Cooking mode. As the sensor cooking proceeds, the food is heated to generate moisture by which the resistance balance of the bridge circuit is deviated to increase the voltage available at AN6 terminal of the LSI.

Then the LSI observes that voltage at AN7 terminal and compares it with its initial value, and when the comparison rate reaches the preset value (fixed for each menu to be cooked), the LSI causes the unit to stop sensor cooking; thereafter, the unit goes in the next operation automatically.

When the LSI starts to detect the initial voltage at AN7 terminal 16 seconds after the unit has been put in the Sensor Cooking mode, if it is not possible to balance the bridge circuit due to disconnection of the absolute humidity sensor, ERROR will appear on the display and the cooking is stopped.



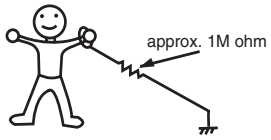
TOUCH CONTROL PANEL SERVICING

1. Precautions for Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc. and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap all PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven:

CAUTION:

THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD.

Therefore, before checking the performance of the touch control panel,

1) Disconnect the power supply cord, and then remove outer case.
2) Open the door and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6) After that procedure, re-connect the power supply cord.

After checking the performance of the touch control panel,

1) Disconnect the power supply cord.
2) Open the door and block it open.
3) Re-connect the leads to the primary of the power transformer.
4) Re-install the outer case (cabinet).
5) Re-connect the power supply cord after the outer case is installed.
6) Run the oven and check all functions.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power supply cord between the touch control panel and the oven proper is long enough that they may be separated from each other. For those models, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which activates an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which activates an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

3. Servicing Tools

Tools required to service the touch control panel assembly.

1) Soldering iron: 30W
   (It is recommended to use a soldering iron with a grounding terminal.)
2) Oscilloscope: Single beam, frequency range: DC-10MHz type or more advanced model.
3) Others: Hand tools

4. Other Precautions

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2) Connect the connectors of the key unit to the control unit being sure that the lead wires are not twisted.
3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5) Be sure to use specified components where high precision is required.

PRECAUTIONS FOR USING LEAD-FREE SOLDER

1. Employing lead-free solder

The "Main PWB" of this model employs lead-free solder. This is indicated by the "LF" symbol printed on the PWB and in the service manual. The suffix letter indicates the alloy type of the solder.

Example:

Sn-Ag-Cu

Indicates lead-free solder of tin, silver and copper.

2. Using lead-free wire solder

When repairing a PWB with the "LF" symbol, only lead-free solder should be used. (Using normal tin/lead alloy solder may result in cold soldered joints and damage to printed patterns.)

As the melting point of lead-free solder is approximately 40°C higher than tin/lead alloy solder, it is recommend that a dedicated bit is used, and that the iron temperature is adjusted accordingly.

3. Soldering

As the melting point of lead-free solder (Sn-Ag-Cu) is higher and has poorer wettability, (flow), to prevent damage to the land of the PWB, extreme care should be taken not to leave the bit in contact with the PWB for an extended period of time. Remove the bit as soon as a good flow is achieved. The high content of tin in lead free solder will cause premature corrosion of the bit. To reduce wear on the bit, reduce the temperature or turn off the iron when it is not required.

Leaving different types of solder on the bit will cause contamination of the different alloys, which will alter their characteristics, making good soldering more difficult. It will be necessary to clean and replace bits more often when

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING AGAINST HIGH VOLTAGE:

Microwave ovens contain circuitry capable of producing very high voltage and current. Contact with the following parts may result in severe, possibly fatal, electric shock.
(Example)
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..

WARNING: To Avoid possible exposure to microwave energy, please follow the instructions below before operating the oven.

1. Disconnect the power supply cord.
2. Make sure that a definite" click" can be heard when the microwave oven drawer is unlatched. (Hold the drawer in a closed position with one hand, then pull the drawer open, this causes the latch leads to rise, it is then possible to hear a "click' as the drawer switches operate.)
3. Visually check the drawer and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.
Do not operate the oven if any of the following conditions exist:

1. Drawer does not close firmly.
2. Drawer latch hook is damaged.
3. The drawer gasket or seal is damaged.
4. The drawer is bent or warped.
5. There are defective parts in the drawer interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:
1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the drawer is not closed.

WARNING FOR WIRING

To prevent an electric shock, take the following precautions:

1. Before wiring:
   1) Disconnect the power supply cord.
   2) Open the drawer.
   3) Wait 60 seconds, then discharge the high voltage capacitor.
2. Don't let the wire leads touch to the following parts:
   1) High voltage parts:
      Magnetron, High voltage transformer, High voltage capacitor and High voltage rectifier assembly.
   2) Hot parts:
      Oven lamp, Magnetron, High voltage transformer and Oven cavity.

MICROWAVE DRAWER DISASSEMBLY

WARNING: Follow all safety precautions as stated at the beginning of this Service Manual before proceeding!

1. Before removing Microwave Drawer, take measures to protect the Drawer louver by either removing the louver or by letting the louver over hang off flat protected surface **(Fig 1)**.

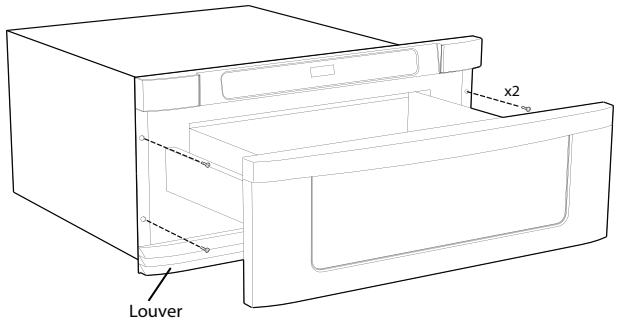
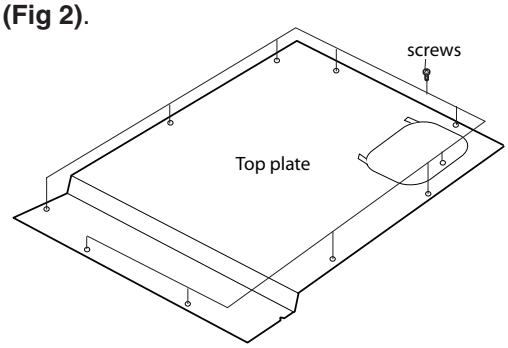


Fig. 1

2. Open the Drawer to access the 4 mounting screws holding the unit on to the wall or cabinet opening. **(Fig 1)**.
3. Close Drawer and carefully pull the unit out from opening and unplug the power supply cord.
4. Remove top cover. **(Fig 2)**.
5. Remove air cover from back of unit, then both side panels. **(Fig 2)**.



6. Remove exhaust duct and back cover. **(Fig 2)**.

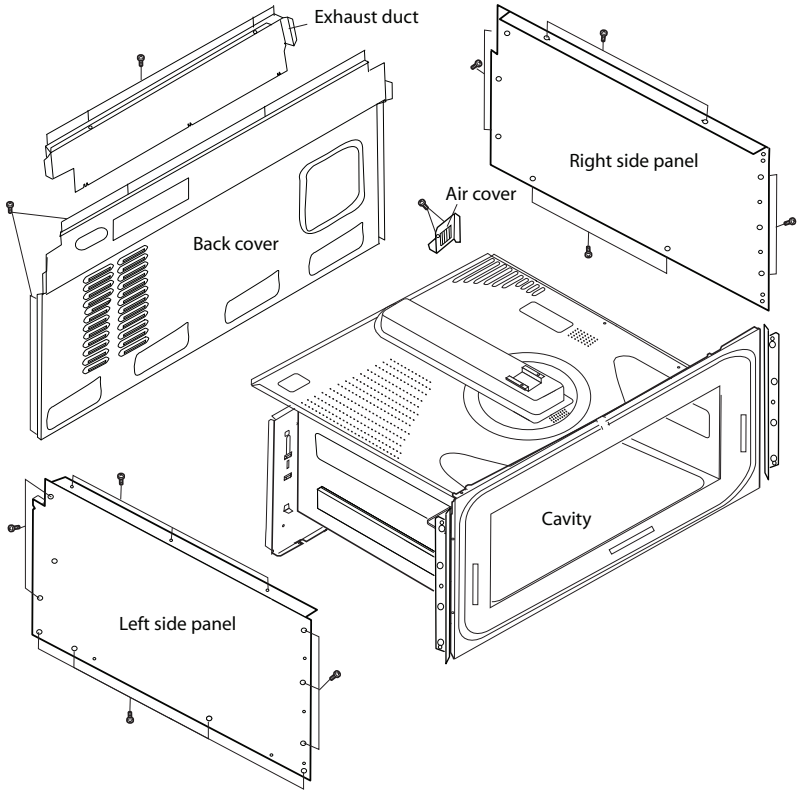
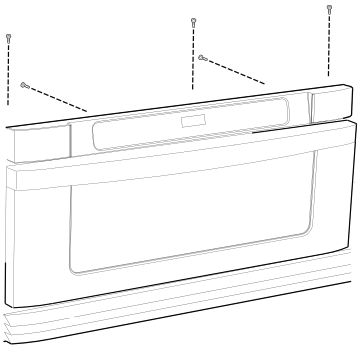


Fig. 2

NOTE: You now have access to various components for the Drawer.

7. To remove the Control Panel Frame Assembly, remove the (5) screws holding the CP frame to the C/P angle in the back **(Fig 3)**.

Fig. 3



8. Unsnap the top C/P frame assembly away from the C/P frame and unplug all wires. The C/P frame assembly is now free.

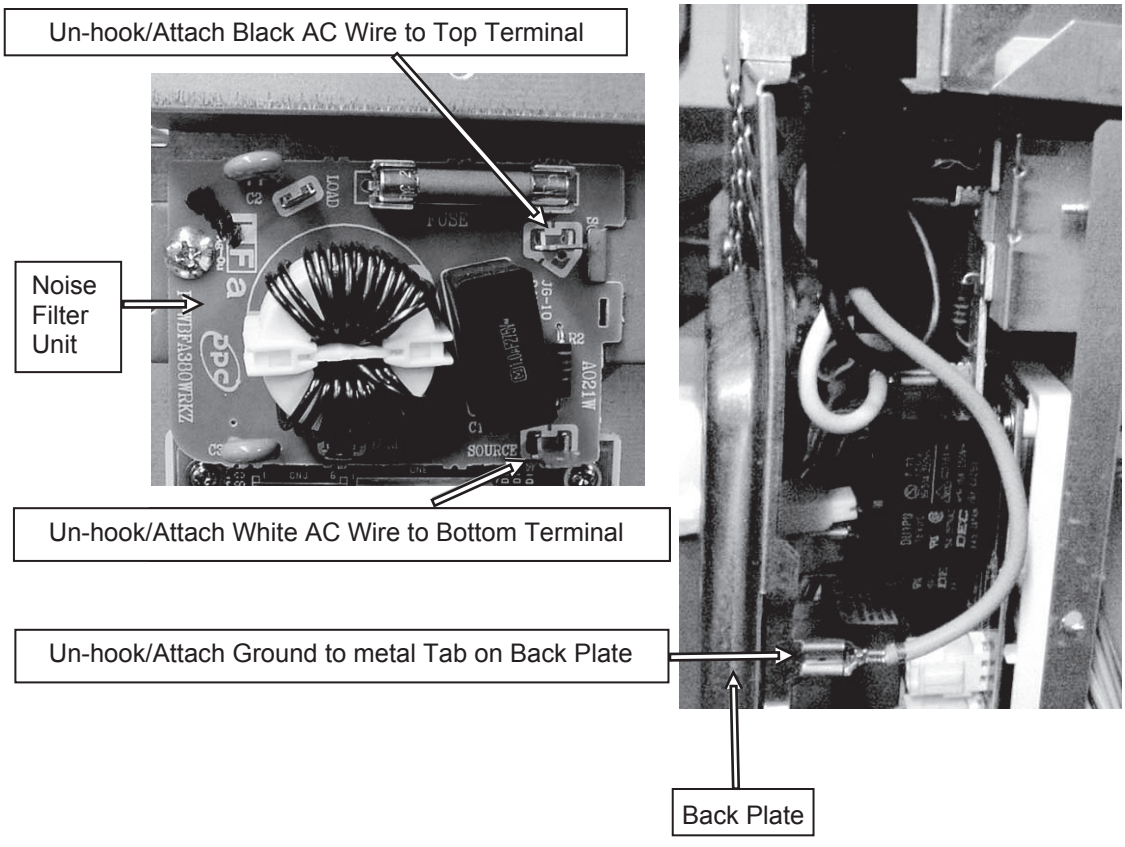
At this point, you will have access to all parts of the Microwave Drawer.

POWER CORD REPLACEMENT

1. Un-hook the black and white AC terminals from the Noise Filter PWB and green ground wire from the back plate. **(Fig 4)**.
2. Attach the black and white AC terminals from the new Power Cord to the Noise Filter as shown in figure 4.

Note: The green ground wire terminal can be attached when reassembling the back plate to the drawer cavity.

Fig. 4


Un-hook/Attach Black AC Wire to Top Terminal
Noise Filter Unit
Un-hook/Attach White AC Wire to Bottom Terminal
Un-hook/Attach Ground to metal Tab on Back Plate
Back Plate

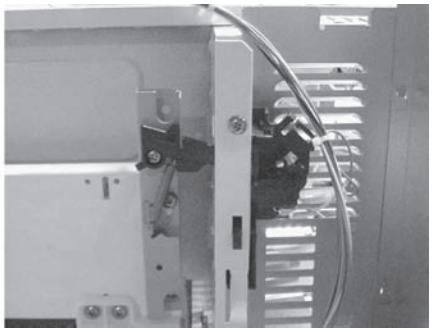
STOP SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH REMOVAL

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the screw holding the latch hook to the oven flange.
5. Remove the latch hook from the oven flange.
6. Disconnect the wire leads of each switch.
7. Remove each switch from the latch hook by pushing the one (1) stopper tab holding each switch.
8. Now, each switch is free.

Re-install

1. Re-install each switch in its place. The secondary interlock switch is in the lower position and the monitor switch is in the top position, located on the left side of the unit. The door sensing switch by itself on the right side of the unit.
2. Re-connect wire leads to each switch. Refer to pictorial diagram.
3. Secure the latch hooks with mounting screws to oven flange.
4. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and "Adjustment procedure".

Latch Hook Left



Latch Hook Right

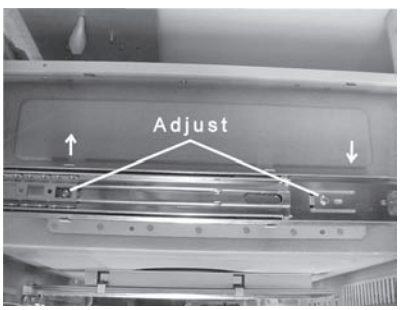
STOP SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH ADJUSTMENT

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. If the door sensing switch, secondary interlock switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.
6. Loosen the screw holding latch hook to the oven cavity flange.
7. With drawer closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the secondary interlock switch is activated with the drawer closed. The horizontal position of the latch hook should be adjusted so that the monitor switch and drawer sensing switch are activated with the drawer closed.
8. Secure the screws with washers firmly.
9. Check all of the switches operation. If any switch has not activated fully, you will need to adjust the slide rail attached to the Microwave cavity.
10. This is done by following the steps to remove the "DRAWER/SLIDE RAIL REMOVAL" on page 30. After you have removed the slide rails, loosen the "2" screws holding the slide rail to the Microwave cavity and tilt the front end up and the rear end down, then tighten the screws **(Fig. S-1)**.
11. Check and assure that the cap nuts on the Drawer Support Angles are centered when passing through the cavity face plate.

After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of drawer toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The secondary interlock switch interrupts the circuit before the door can be opened.
3. Monitor switch contacts close when door is opened.
4. Door sensing switch contacts open when door is opened.
5. Reassemble the unit and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.

Fig. S-1



DRAWER/SLIDE RAIL REMOVAL

DRAWER ASSEMBLY AND CHOKE REMOVAL

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the both right and left side panels.
5. Remove (2) Drawer Support Covers from Choke Cover as shown in **(Fig. D-1)**.
6. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and the door frame.
7. Carefully slide choke cover away from drawer as far as possible.
8. Remove (6) screws from all (3) drawer Support Angles as shown in **(Fig. D-2)**.
9. Unhook Drawer Support Angles from drawer, then remove.
10. Now, the door assembly is free and the Choke Cover can now be removed.

Fig. D-1

NOTE:

To remove only the Microwave Drawer, follow steps 1, 2, 5, 8, 9 & 10 as instructed under "DRAWER ASSEMBLY AND CHOKE REMOVAL".

Fig. D-2

DRAWER SUPPORT ANGLE REMOVAL

1. Remove Drawer Assembly and Choke Cover as stated in "DRAWER ASSEMBLY AND CHOKE REMOVAL".
2. Remove (2) screws from right or left Latch Angle Assembly, then remove Angle assembly **(Fig. D-4)**.
3. Separate Slide Rails by moving inside lever of Slide Rails. The Slide Rail will now separate by pulling straight forward and out **(Fig. D-3)**.
4. At this point, you can replace either Latch Angle Assy or Latch Angles.

To reassemble, just reverse the above order.

After reassembly, do the following.

(A) Make sure that drawer sensing switch, secondary interlock switch and monitor switch are operating properly. (Refer to chapter "Test Procedures".)

(B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

After any servicing, make sure of the following :

1. Drawer latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Drawer is positioned with its face pressed toward cavity face plate.
4. Reassemble the unit and check for microwave leakage around drawer with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

Note: The drawer on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven drawer is not abnormal and do not of themselves

Fig. D-3

Fig. D-4

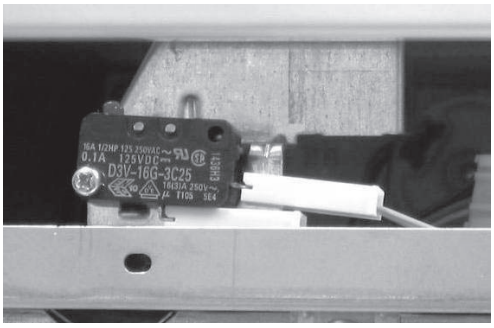
SWITCH ANGLE REMOVAL/ADJUSTMENT

SWITCH ANGLE REMOVAL

(Locate either the right or left switch angle)

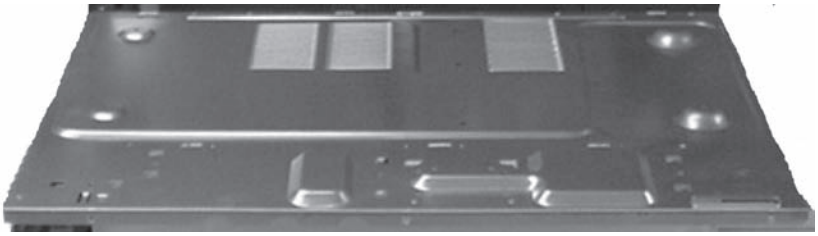
1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. To remove switch, remove screw (1) holding switch to switch angle **(Fig. S-1)**.

Fig. S-1

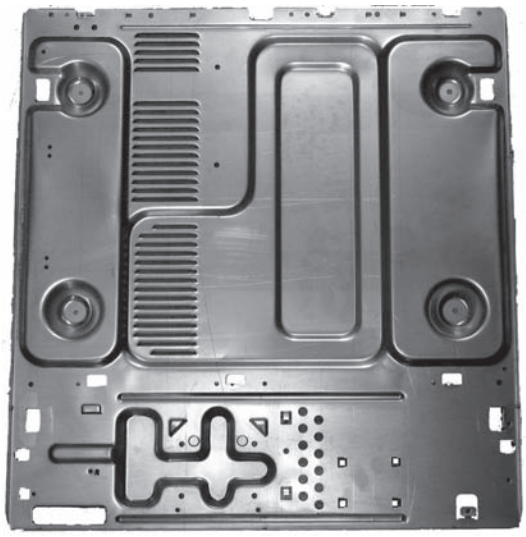


5. To replace switch angle, remove bottom cover and remove the 2 screws holding the switch lever **(Fig. S-2)**.
6. Proceed in reverse to reinstall.
7. Adjust switch.

Fig. S-2



KB-6025M



KB-6024M

ACTUATOR REMOVAL/ADJUSTMENT

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Locate either the right or left actuator and remove the 2 screws holding the actuator to the door support angles.
5. Relpace with the new actuator **(Fig. A-3)**.

Actuator adjustment

6. It is very critical that proper adjustment is made to actuator.
7. Adjust each actuator to fully depress ("0" gap) switch lever switches on left and right side **(Fig. A-4)**.

NOTE: If this adjustment is not adjusted correctly, it will effect the performance of the Auto Drawer.

Fig. A-3

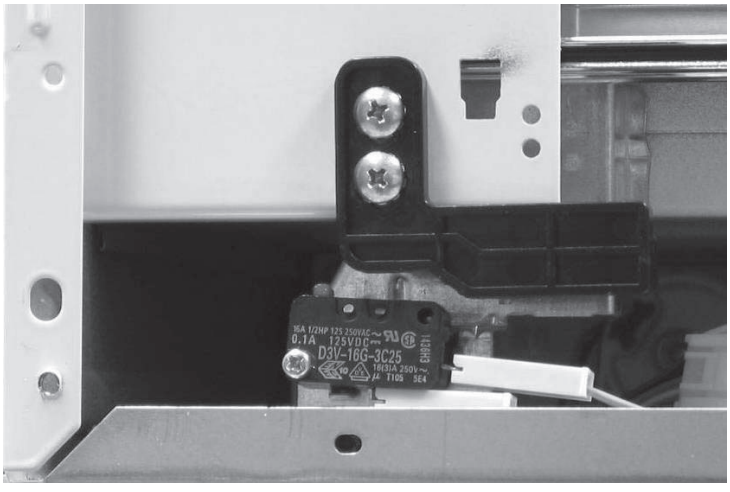
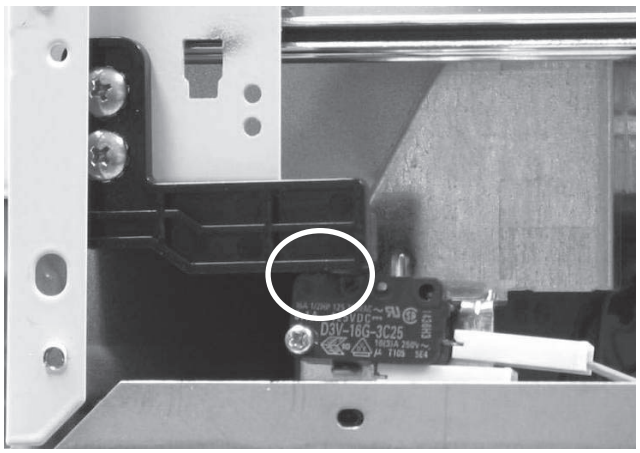


Fig. A-4



AUTO DRAWER GEAR REMOVAL/INSTALLATION

(This procedure requires a 14" or greater phillips head screwdriver)

1. Disengage the power supply to the unit.
2. Open the drawer and keep it open.
3. Remove the top cover and right side cabinet.
4. Unhook wiring connector to Auto Drawer Gear motor**.**
5. Remove the (3) screws holding the auto drawer gear to the bottom cavity angle **(Fig. G-1)**.
6. Disengage (pull) Auto Drawer Gear motor from rack gear (careful not to touch PWB).
7. The Auto Drawer Gear motor is now free.

Installation:

1. Proceed in reverse to reinstall the Auto Drawer Gear motor taking care that the gear teeth are set into the cavity angle correctly before tightening screws (careful not to touch PWB) .

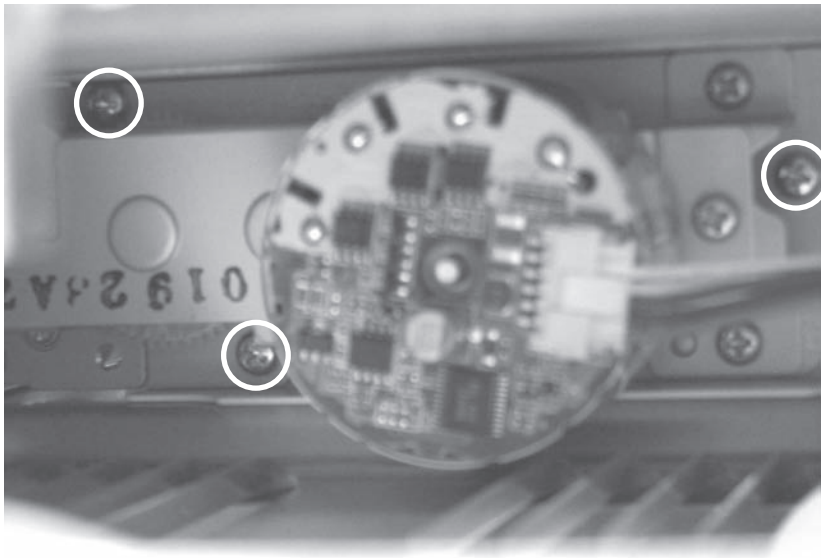


Fig. G-1

RACK GEAR / OIL DAMPER REMOVAL/INSTALLATION

1. Follow the Microwave Drawer disassembly as previously stated above.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the Microwave Drawer by following steps under "DRAWER SUPPORT ANGLE REMOVAL".
5. Remove the (3) screws holding the Rack Gear to the bottom slide rail **(Fig. G-2)**.
6. With the bottom slide rail off, locate tab holding Oil Damper and remove, then replace with new one **(Fig. G-3)**.
7. Proceed in reverse to reinstall the new Rack Gear. and/or Oil Damper.

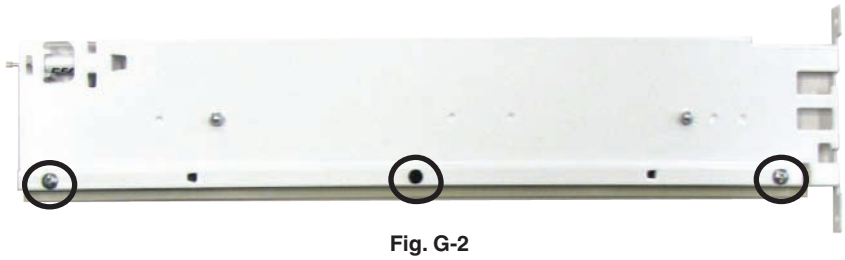


Fig. G-2

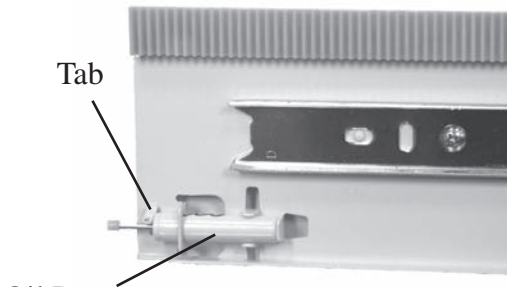
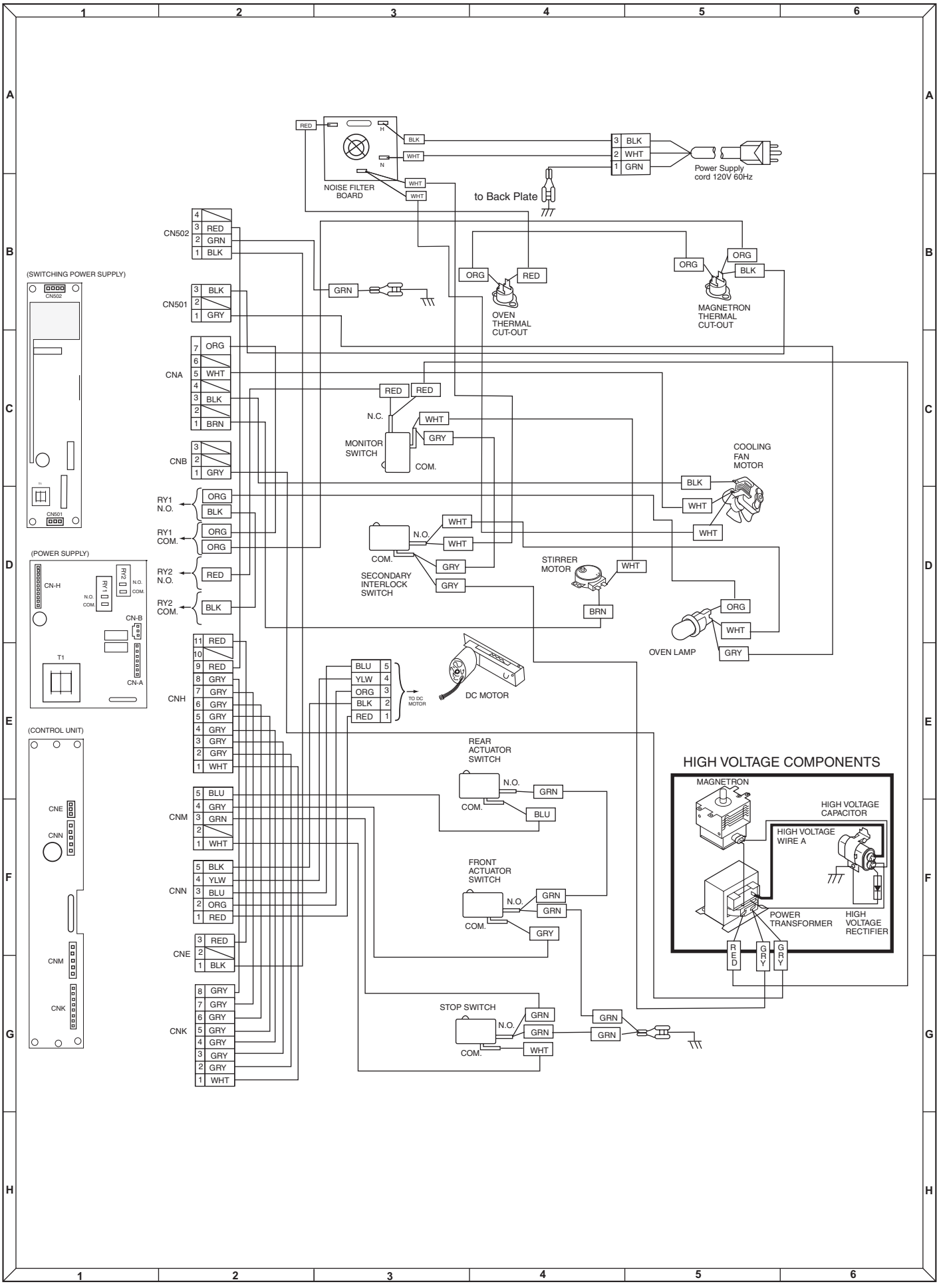


Fig. G-3

OIL DAMPER INFORMATION

The "Oil Damper" helps the drawer from closing too hard.


NOISE FILTER BOARD
Power Supply cord 120V 60Hz
to Back Plate
OVEN THERMAL CUT-OUT
MAGNETRON THERMAL CUT-OUT
MONITOR SWITCH
COOLING FAN MOTOR
SECONDARY INTERLOCK SWITCH
STIRRER MOTOR
OVEN LAMP
DC MOTOR
REAR ACTUATOR SWITCH
FRONT ACTUATOR SWITCH
STOP SWITCH
HIGH VOLTAGE COMPONENTS
MAGNETRON
HIGH VOLTAGE CAPACITOR
HIGH VOLTAGE WIRE A
POWER TRANSFORMER
HIGH VOLTAGE RECTIFIER
(SWITCHING POWER SUPPLY)
(POWER SUPPLY)
(CONTROL UNIT)
CN502
CN501
CNA
CNB
CNH
CNM
CNN
CNE
CNK
RY1 N.O.
RY1 COM.
RY2 N.O.
RY2 COM.

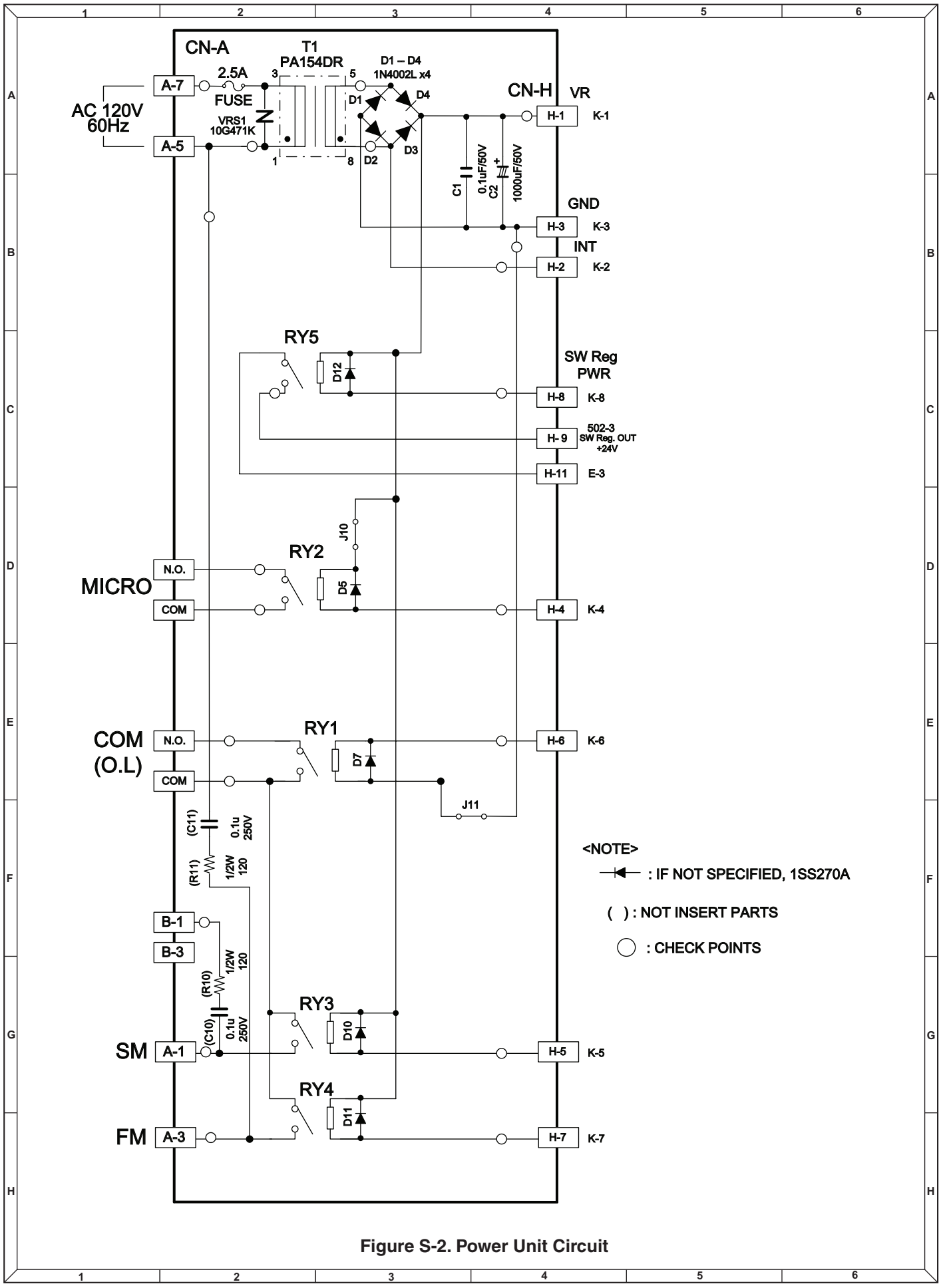


Figure S-2. Power Unit Circuit

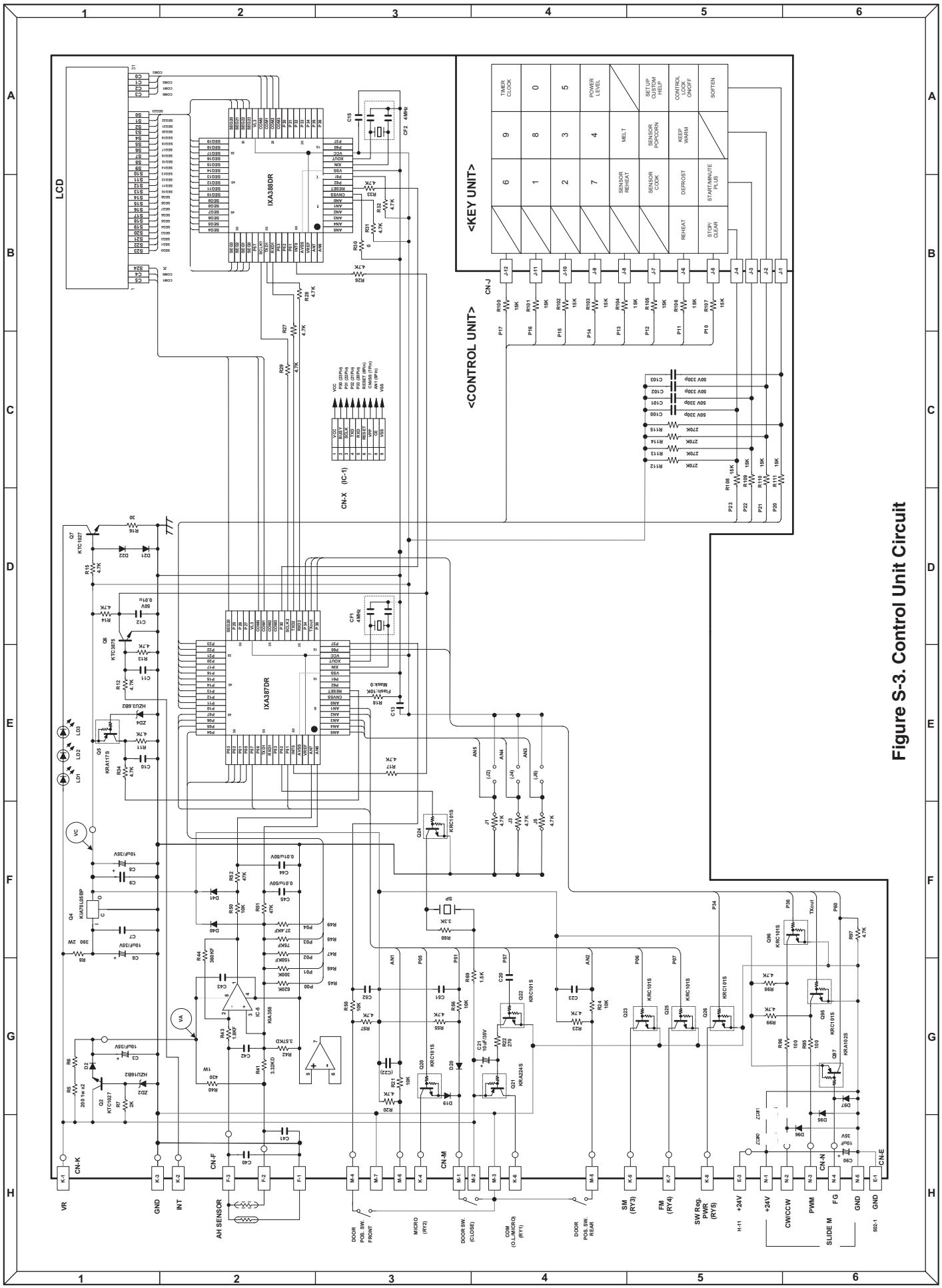


Figure S-3. Control Unit Circuit

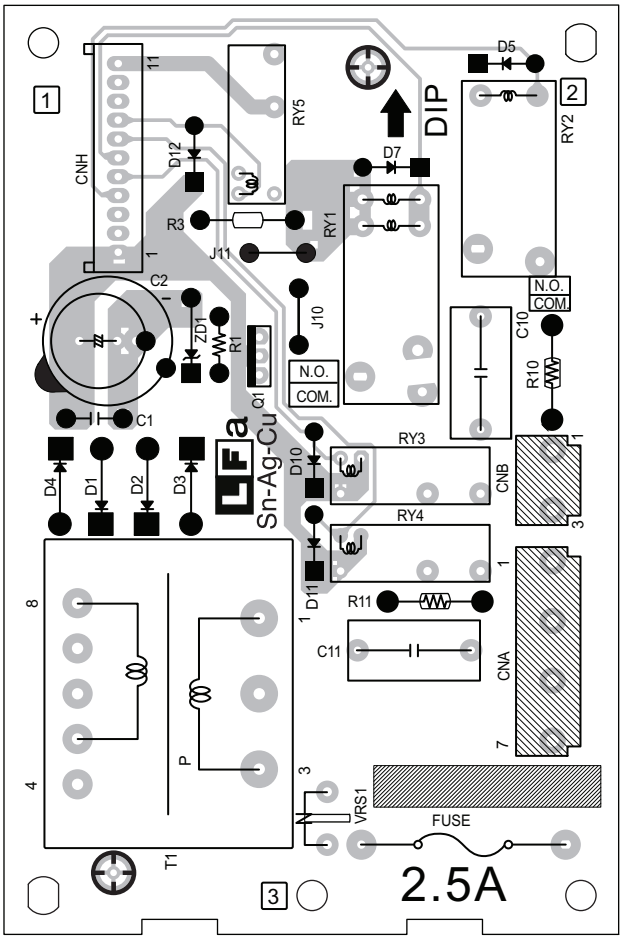


Figure S-4. Printed Wiring Board of Power Unit

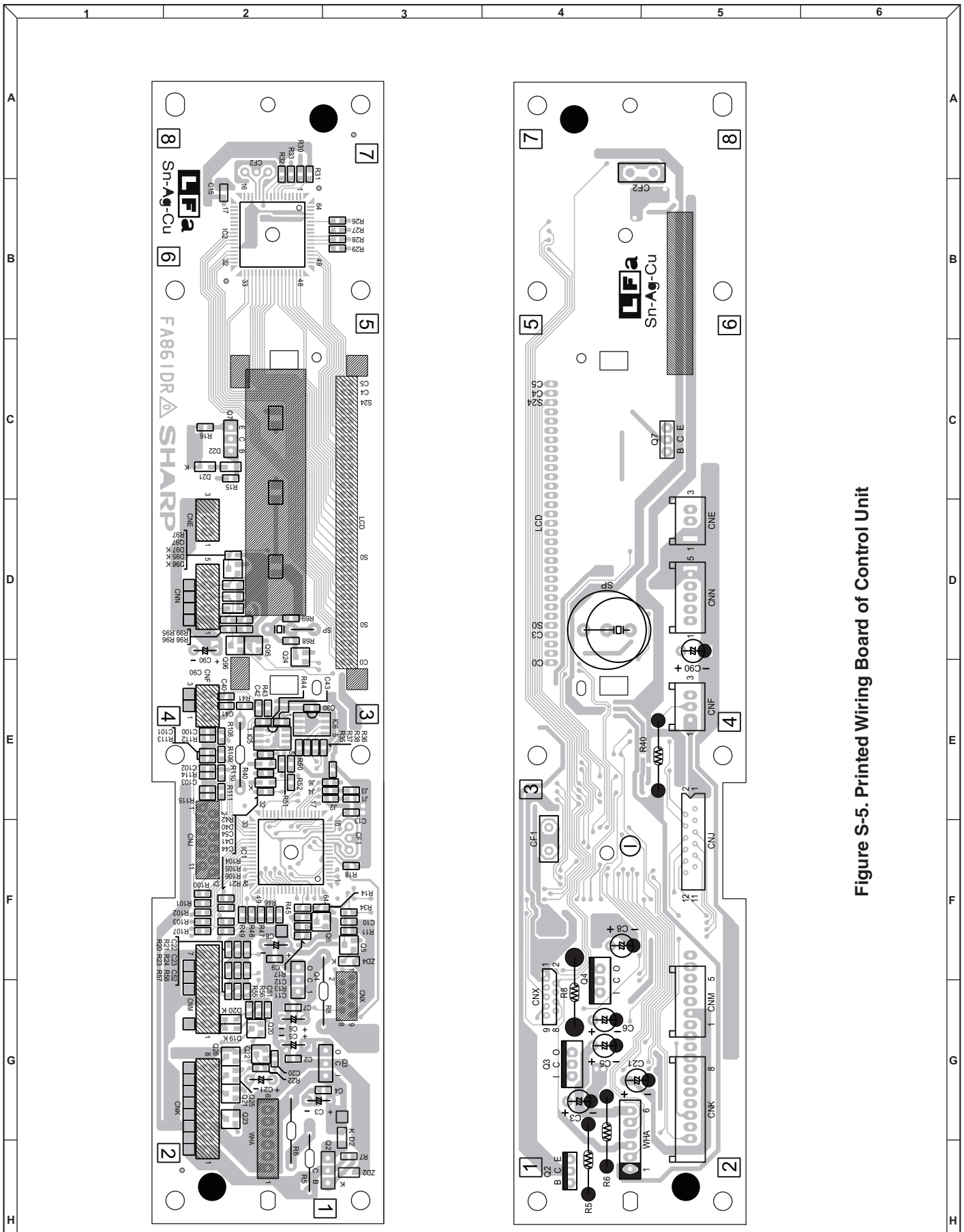


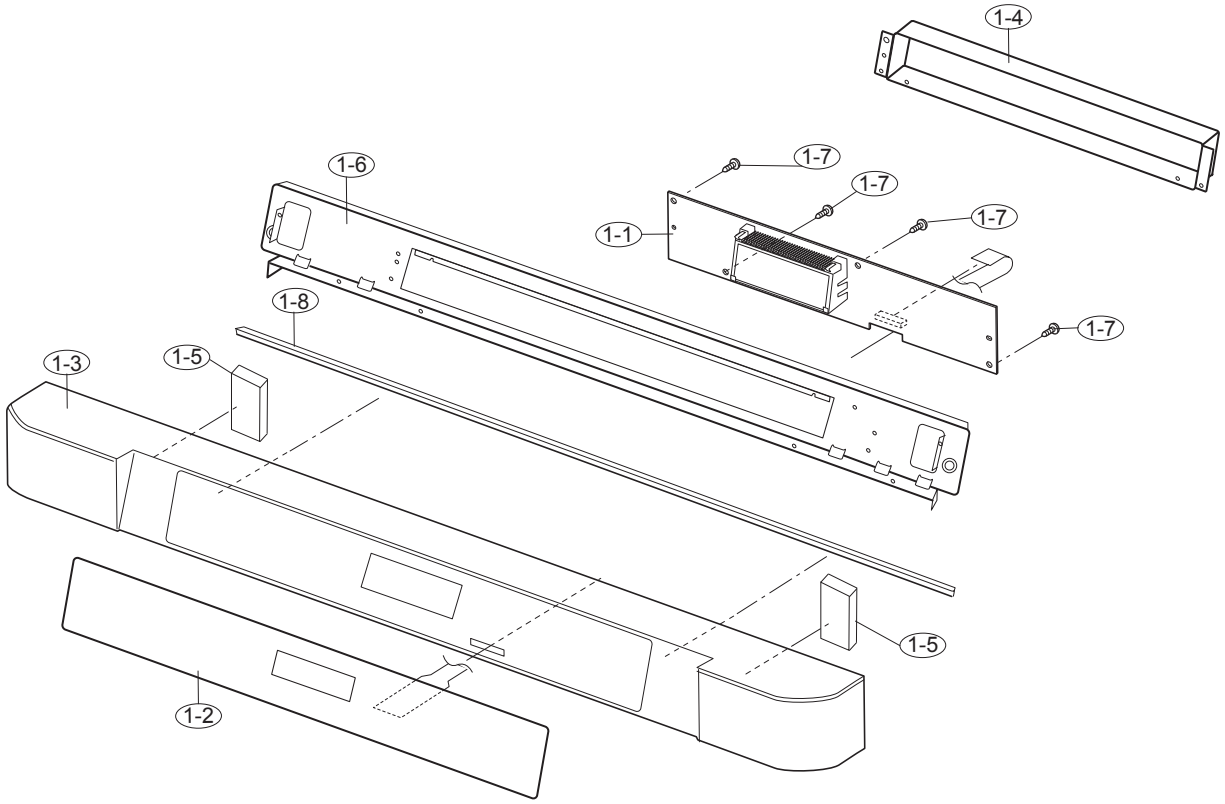
Figure S-5. Printed Wiring Board of Control Unit

CONTROL PANEL PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V. **"§" MARK: PARTS DELIVERY SECTION**

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
1-1	DPWBFB156MRU0	M	Control unit	1	BM
1-2	FUNTKB492MRE0	M	Key unit [KB6024MS] [KB6024MK]	1	AQ
1-2	FUNTKB494MRE0	M	Key unit [KB6024MW]	1	AP
1-2	FUNTKB493MRE0	M	Key unit [KB6025MS] [KB6025MK]	1	AR
1-2	FUNTKB495MRE0	M	Key unit [KB6025MW]	1	AS
1-3	FPNLCB533MRK0	M	C/P frame assy [KB6024MS]	1	AX
1-3	FPNLCB527MRK0	M	C/P frame assy [KB6024MK]	1	AX
1-3	FPNLCB528MRK0	M	C/P frame assy [KB6024MW]	1	AX
1-3	FPNLCB534MRK0	M	C/P frame assy [KB6025MS]	1	AY
1-3	FPNLCB504MRK0	M	C/P frame assy [KB6025MK]	1	AY
1-3	FPNLCB505MRK0	M	C/P frame assy [KB6025MW]	1	AY
1-4	PCOVPB140MRP0	M	C/P cover	1	AM
1-5	PCUSUB106MRP0	M	C/P cushion [KB6024MS/MK/MW only]	2	AA
1-6	LANGTB182MRP0	M	C/P angle [KB6024MS/MK/MW]	1	AM
1-6	LANGTB111MRP0	M	C/P angle [KB6025MS/MK/MW]	1	AM
1-7	XEPSD30P10XS0	M	Screw	4	AA
1-8	PSEL-B002MRE0	M	Moisture seal gasket [KB6024MS/MK/MW only]	1	AN

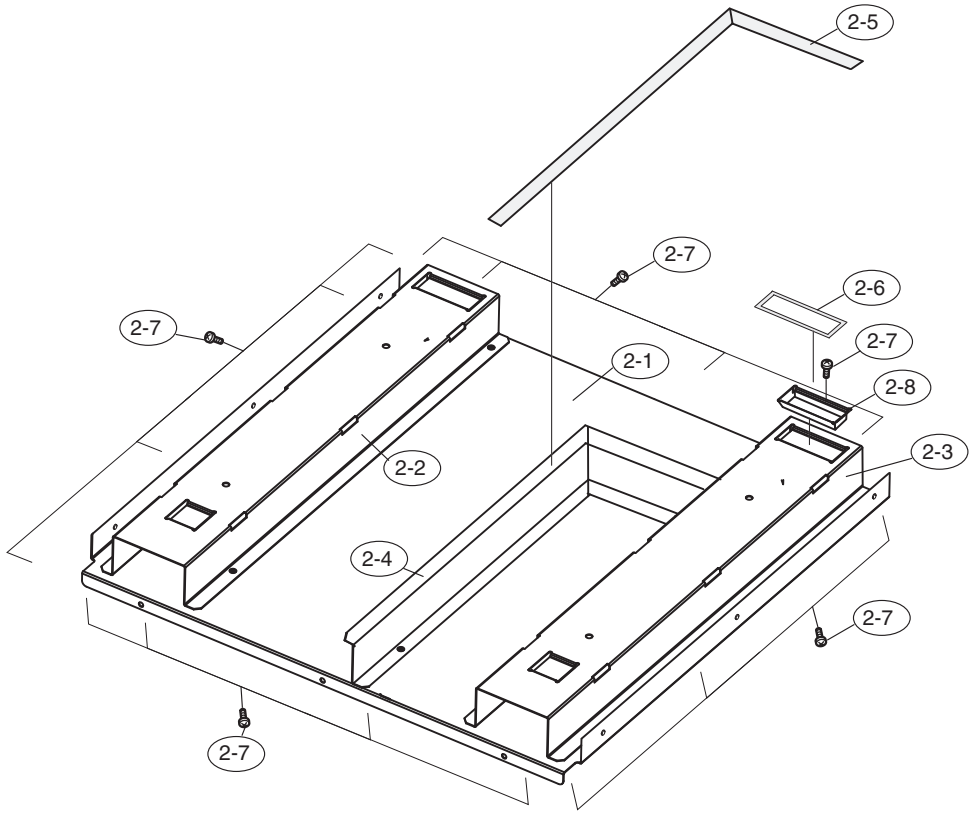
CONTROL PANEL



BOTTOM COVER PARTS LIST

Note: The parts marked "∆" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V.

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
2-1	PCOVPB168MRP0A	M	Bottom cover [KB6024MS/MK/MW]	1	AN
2-1	PCOVPB141MRP0	M	Bottom cover [KB6025MS/MK/MW]	1	AX
2-2	LANG-B043MRP0	M	Air guide L [KB6024MS/MK/MW]	1	AQ
2-2	LANG-B027MRP0	M	Air guide L [KB6025MS/MK/MW]	1	AL
2-3	LANG-B047MRP0	M	Air guide R [KB6024MS/MK/MW] [KB6025MS/MK/MW]	1	AN
2-4	PSKR-B023MRP0	M	Partition angle [KB6024MS/MK/MW]	1	AH
2-4	PSKR-B024MRP0	M	Partition angle [KB6025MS/MK/MW]	1	AK
2-5	PCUSUB104MRP0	M	Bottom cushion A [KB6024MS/MK/MW]	1	AB
2-5	PCUSUB062MRP0	M	Bottom cushion A [KB6025MS/MK/MW]	1	AB
2-6	PCUSGB063MRP0	M	Bottom cushion B [KB6024MS/MK/MW] [KB6025MS/MK/MW]	1	AB
2-7	XOTS740P12000	M	Screw	14	AB
2-8	PDUC-B173MRF0	M	Exhaust guide [KB6024MS/MK/MW] [KB6025MS/MK/MW]	1	AP



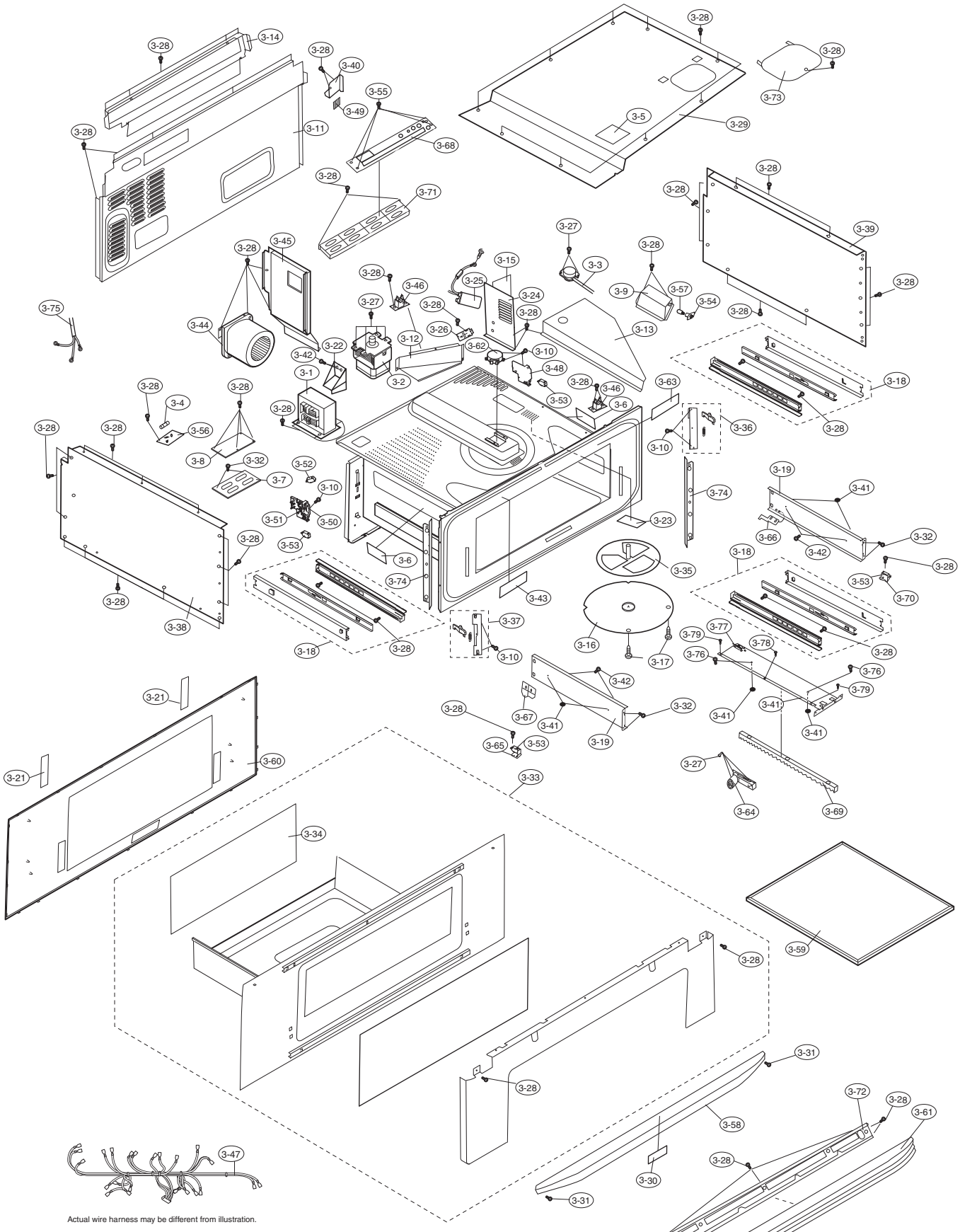
MICROWAVE DRAWER PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V. **"§" MARK: PARTS DELIVERY SECTION**

	REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
	3- 1	RTRN-B084MRE0	M	Transformer	1	BE
Δ	3- 2	RV-MZA288WRE0	M	Magnetron	1	BK
	3- 3	FDTCTA234WRKZ	M	Sensor assy	1	AP
	3- 4	FFS-BA018/KIT	M	Monitor switch (V-16G-2C25) with fuse (20A) assembly	1	AF
	3- 5	TMAPCB110MRR0	M	Schematic	1	AB
	3- 6	TCAUAB050MRR0	M	Monitor caution label	2	AD
	3- 7	LHLD-B034MRF0	M	Power supply unit holder	1	AC
	3- 8	DPWBFB137MRU0	M	Power supply	2	AZ
	3- 9	LANGTB122MRP0	M	Oven lamp angle	1	AK
	3-10	LX-CZ0052WRE0	M	Screw/washer	6	AA
	3-11	GCABDB012MRP0A	M	Back plate [KB6024MS/MK/MW]	1	AU
	3-11	GCABDB006MRP0	M	Back plate [KB6025MS/MK/MW]	1	AW
	3-12	PDUC-B141MRP0	M	Mag duct	1	AE
	3-13	PDUC-B142MRP0A	M	Sensor duct	1	AK
	3-14	PDUC-B161MRP0A	M	Exhaust duct A [KB6024MS/MK/MW]	1	AK
	3-14	PDUC-B004MRP0	M	Exhaust duct A [KB6025MS/MK/MW]	1	AL
	3-15	PDUC-B162MRP0	M	Exhaust duct B [KB6024MS/MK/MW]	1	AH
	3-15	PDUC-B148MRP0	M	Exhaust duct B [KB6025MS/MK/MW]	1	AF
	3-16	FCOVPB052MRY0	M	Stir cover assy	1	AR
	3-17	PCLICB003MRE0	M	Canoe clip	3	AB
	3-18	MSLIFB001/KIT	M	Slide rail	3	AV
	3-19	LANGTB120MRT0	M	Door support angle A	2	AK
	3-20	LANGTB211MRT0	M	Door support angle B	1	AB
	3-21	GCOVHB060MRF0	M	Door support cover	2	AH
*	3-22	PSKR-B018MRP0	M	Magnetron air guide	1	AC
	3-23	PFILWB005MRP0	M	Lamp filter	1	AB
	3-24	PDUC-B162MRP0	M	Partition angle [KB6024MS/MK/MW]	1	AH
	3-24	LANGTB076MRP0A	M	Partition angle [KB6025MS/MK/MW]	1	AB
	3-25	FC-QZB052MRK0A	M	HVC assy	1	AP
	3-26	LBNDKB007MRP0	M	HVC band	1	AB
	3-27	XCBS730P08000	M	Screw	3	AB
	3-28	XOTS740P12000	M	Screw	79	AA
	3-29	PCOVPB169MRP0A	M	Top cover [KB6024MS/MK/MW]	1	AE
	3-29	PCOVPB142MRP0	M	Top cover [KB6025MS/MK/MW]	1	AW
	3-30	TLAB-B063MRR0	M	Menu label	1	AD
	3-31	XOTS740P12RV0	M	Screw	4	AB
	3-32	XEPS730P10XS0	M	Power unit assy screw	2	AC
	3-33	DDORFB128MRK0	M	Door assy [KB6024MS]	1	BU
	3-33	DDORFB120MRK0	M	Door assy [KB6024MK]	1	BS
	3-33	DDORFB121MRK0	M	Door assy [KB6024MW]	1	BS
	3-33	DDORFB098MRK0	M	Door assy [KB6025MS]	1	BU
	3-33	DDORFB102MRK0	M	Door assy [KB6025MK]	1	BU
	3-33	DDORFB103MRK0	M	Door assy [KB6025MW]	1	BU
	3-34	PSHEPB184MRE0	M	Sealer film	1	AQ
	3-35	FFAN-B008MRK0	M	Stirrer fan assy	1	AK
	3-36	FANGTB015MRK0	M	Latch angle assy R [KB6024MS/MK/MW]	1	AL
	3-37	FANGTB016MRK0	M	Latch angle assy L [KB6024MS/MK/MW]	1	AL
	3-36	FANGTB010MRK0	M	Latch angle assy R [KB6025MS/MK/MW]	1	AH
	3-37	FANGTB011MRK0	M	Latch angle assy L [KB6025MS/MK/MW]	1	AH
	3-38	GCABUB158MRP0A	M	Side cabinet L [KB6024MS/MK/MW]	1	AN
	3-39	GCABUB157MRP0A	M	Side cabinet R [KB6024MS/MK/MW]	1	AN
	3-38	GCABUB146MRP0A	M	Side cabinet L [KB6025MS/MK/MW]	1	AU
	3-39	GCABUB145MRP0A	M	Side cabinet R [KB6025MS/MK/MW]	1	AU
	3-40	PCOVPB143MRP0	M	Air cover	1	AE
	3-41	LX-NZB006MRE0	M	Cap nut	6	AA
	3-42	XHTS740P08000	M	Screw	4	AA
	3-43	TCAUKB001MRR0	M	Stirrer cover cleaning label	1	AA
	3-44	FMOTEA499WRKZ	M	Fan motor	1	AY
	3-45	LANGTB155MRP0	M	Fan motor angle	1	AK
	3-46	RTHM-A135WRZZ	M	Thermal cut-out	2	AD
	3-47	FW-VZB312MRE0	M	Harness assy [KB6024MS/MK/MW]	1	AW
	3-47	FW-VZB267MRE0	M	Harness assy [KB6025MS/MK/MW]	1	AV

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
3-48	PHOK-A079WRF0	M	Latch hook R	1	AH
3-49	PCUSGB066MRP0	M	Cushion	1	AB
3-50	PHOK-A080WRF0	M	Latch hook L	1	AF
3-51	MLEVPA214WRF0	M	Switch lever L	1	AK
3-52	QSW-MA---WRE0	M	Monitor switch - must replace by assy. (3-4)	1	AE
3-53	QSW-MA085WRE0	M	Switch	4	AE
3-54	QSOCLB010MRE0	M	Lamp socket	1	AG
3-55	XEPS730P10XS0	M	Screw	4	AC
3-56	FPWBFA380WRKZ	M	Noise filter unit	1	AM
3-57	RLMPTA093WRZZ	M	Oven lamp	1	AD
3-58	JHNDPB071MRT0	M	Door handle [KB6024MS]	1	AY
3-58	JHNDPB072MRF0	M	Door handle [KB6024MK]	1	AY
3-58	JHNDPB073MRF0	M	Door handle [KB6024MW]	1	BB
3-58	JHNDPB058MRT0	M	Door handle [KB6025MS]	1	BC
3-58	JHNDPB059MRT0	M	Door handle [KB6025MK]	1	BC
3-58	JHNDPB060MRT0	M	Door handle [KB6025MW]	1	BC
3-59	FGLSPB002MRY0	M	Oven tray assy	1	BK
3-60	GCOVHB058MRF0	M	Choke cover	1	AN
3-61	PDIF-B062MRT0	M	Louver [KB6024MS]	1	AX
3-61	PDIF-B063MRF0	M	Louver [KB6024MK]	1	AT
3-61	PDIF-B064MRF0	M	Louver [KB6024MW]	1	AS
3-61	PDIF-B053MRT0	M	Louver [KB6025MS]	1	AX
3-61	PDIF-B054MRT0	M	Louver [KB6025MK]	1	AT
3-61	PDIF-B055MRT0	M	Louver [KB6025MW]	1	AU
3-62	RMOTDA262WRZZ	M	Stirrer motor	4	AH
3-63	TCAUHB009MRR0	M	User caution label	1	AA
3-64	FANGTB019MRK0	M	Auto drawer gear assy	1	BL
3-65	LANGTB217MRP0	M	Switch angle L	2	AC
3-66	MACT-B003MRF0	M	Actuator R	1	AD
3-67	MACT-B004MRF0	M	Actuator L	1	AD
3-68	DPWBFC526WRKZ	M	SW power supply	1	BM
3-69	NGERRB005MRF0	M	Rack gear	2	AQ
3-70	LANGTB218MRP0	M	Switch angle R	1	AC
3-71	LHLD-B035MRF0	M	Switch PSU holder [KB6024MS/MK/MW]	1	AC
3-71	LHLD-B033MRF0	M	Switch PSU holder [KB6025MS/MK/MW]	1	AE
3-72	LANGTB180MRP0	M	Louver angle [KB6024MS/MK/MW]	1	AL
3-72	LANGTB108MRP0A	M	Louver angle [KB6025MS/MK/MW]	1	AL
3-73	PCOVPB130MRP0	M	Cover	1	AG
3-74	LANGTB183MRP0	M	Side angle	2	AK
3-75	FACCDB020MRE0	M	Power supply cord [KB6024MS/MK/MW]	1	AM
3-75	FACCDB018MRE0	M	Power supply cord [KB6025MS/MK/MW]	1	AM
3-76	XHTS740P06000	M	Screw	2	AB
3-77	PDMP-B002MRE0	M	oil damper	1	AQ
3-78	LX-CZA084WREZ	M	Special screw	1	AK
3-79	XOTS740P08000	M	Screw	2	AK

MICROWAVE DRAWER



Actual wire harness may be different from illustration.

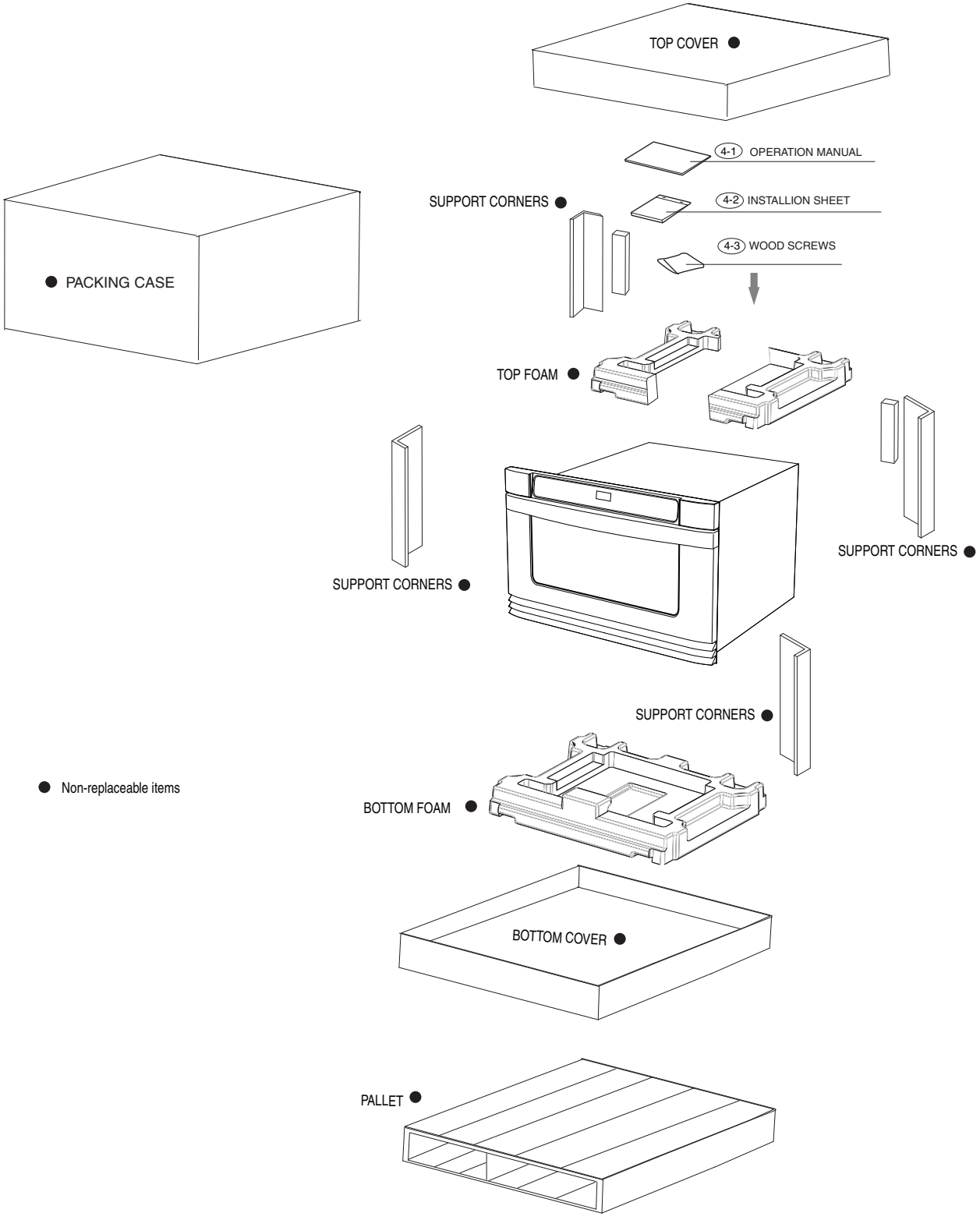
MICROWAVE DRAWER HARNESSES

PACKING PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V.

"§" MARK: PARTS DELIVERY SECTION

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
4- 1	TINSEB473MRK0	M	Operation manual	1	AL
4- 2	TINSEB474MRR0	M	Installation instructions	1	AE
4- 3	XTPUW50P35000	M	Wood screws	4	AC



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